

Mainframe  
Features

HP Internet Advisor

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## Mainframe Features

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## HP Internet Advisor

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## Notice

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## Safety Information

Before you use this instrument, be sure to pay special attention to the "Safety" and "Warning" sections in this Manual. Failure to comply with the precautions or with specific warnings in this book violates safety standards of design, manufacture, and intended use of this instrument. Hewlett-Packard Company assumes no liability for the customer's failure to comply with these requirements.

**Electric Shock Hazard.** Do not remove the system covers. To avoid electric shock, use only the supplied power cords and connect only to properly grounded (3-pin) wall outlets.

**Explosion Hazard.** Do not operate in the presence of flammable gases.

**Fire Hazard.** For continued protection against fire hazard replace fuse with same type and rating.

**Hazardous Material.** Should the LCD be damaged the liquid crystal material can leak. Avoid all contact with this material, especially swallowing. Use soap and water to thoroughly wash all skin and clothing contaminated with the liquid crystal material.

**Cleaning.** To clean the instrument, use a damp cloth moistened with a mild solution of soap and water. *Do not* use harsh chemicals. *Do not* let water get into the instrument.

**Product Damage.** Do not use this product when:

- the product shows visible damage,
- fails to perform,
- has been stored in unfavorable conditions,
- or has been subject to severe transport stresses.

Make the product inoperative and secure it against any unintended operation. Contact your nearest Hewlett-Packard Sales office for assistance.

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## Warning Symbols Used in This Book:



Instruction book symbol: the product will be marked with this symbol when it is necessary for the user to refer to the instruction book in order to protect against damage.



Indicates potential for electrical shock.

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### **WARNING**

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An operating procedure, practice,, etc. which, if not correctly followed could result in personal injury or loss of life.

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### **CAUTION**

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An operating procedure, practice, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment or software.

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## Conventions Used in this Book

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### NOTE

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An operating procedure, practice, or information of importance, separated from normal text.

### Boxed Information

Explanatory comments or supplementary instructions are presented in boxed format.

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## Operating Restrictions

The following warnings and operating information are shown in French followed by the English translation.

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### MISE ENGARDE

Cet appareil répond aux normes de la «Classe de sécurité I» et est muni d'un fil de mise à la terre pour votre protection.

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### WARNING

This product is a Safety Class I instrument with a protective earth terminal.

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### MISE ENGARDE

Pour prévenir les risques de choc électrique, la broche de mise à la terre du cordon d'alimentation ne doit pas être désactivée.

---

### WARNING

For protection from electric shock hazard, power cord ground must not be defeated.

### Restrictions d'utilisation

L'utilisateur se doit d'observer les mesures de précaution énumérées ci-dessous pour toutes les phases d'utilisation, de service et de réparation de cet appareil. Le fait de ne pas s'y conformer équivaut à ne pas respecter les mises en gardes spécifiques contenues dans ce manuel et constitue une violation des normes de sécurité relatives à la conception, la fabrication et l'utilisation prévue de cet appareil. La société Hewlett-Packard n'assume aucune responsabilité envers un client qui manquerait de se conformer à ces exigences.

### Operating Restrictions

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions with specific warnings in this manual violate safety standards of design, manufacture, and intended use of this instrument.

### Mise à la terre

Afin de minimiser les risques de choc électrique, le châssis et le cabinet de l'appareil doivent être mis à la terre. L'appareil est équipé d'un cordon d'alimentation muni d'une fiche homologuée à trois lames, compatible c.a. La prise murale et la prise femelle de la rallonge électrique doivent respecter les normes de sécurité de la «Commission électrotechnique internationale» (IEC).

### Grounding

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The instrument is equipped with a three-conductor AC power cable compatible with an approved three-contact electrical outlet. The power jack and mating plug of the power cord must meet International Electrotechnical Commission (IEC) safety standards.

### **Environnement**

Ne faites pas fonctionner cet appareil en présence de gaz inflammables ou de vapeurs dangereuses. L'utilisation de n'importe quel appareil électrique dans ces conditions constitue un risque élevé pour votre sécurité.

### **Service et ajustement**

Des «tensions dangereuses» résident dans cet appareil. Par conséquent, le service et l'ajustement doivent être effectués uniquement par une personne qualifiée.

Ne remplacez pas de composants lorsque le cordon d'alimentation est sous tension. Il pourrait y avoir présence de «tensions dangereuses» même lorsque l'appareil est déconnecté.

Ne faites pas de service interne ou d'ajustement sauf en présence d'une autre personne, capable de prodiguer les premiers soins et de pratiquer la réanimation.

### **Matière dangereuse**

Si l'affichage LCD est endommagé, la matière constituant les cristaux liquides peut se répandre. Éviter tout contact avec cette matière, et en particulier ne pas l'avaler. Utiliser de l'eau et du savon pour nettoyer soigneusement la peau et les vêtements qui auraient été contaminés par la matière constituant les cristaux liquides.

### **Service non autorisé**

L'installation de pièces étrangères, ou toute modification apportée à l'appareil sans le consentement de Hewlett-Packard est formellement interdit. Le fait de procéder à de tels modifications sans autorisation pourrait entraîner l'annulation de la garantie de l'appareil ou de tout contrat de service.

Pour un service et des réparations autorisées, retournez l'appareil à un point de vente et service Hewlett-Packard.

### **Environment**

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

### **Service and Adjustment**

Dangerous voltages exist within this instrument. Service and adjustment of this instrument is to be performed only by trained service personnel.

Do not replace components with the power cable connected. Dangerous voltages may be present even when the power cable is disconnected.

Do not perform internal servicing or adjustment unless another person, capable of rendering first aid and resuscitation is present.

### **Hazardous Material**

Should the LCD be damaged the liquid crystal material can leak. Avoid all contact with this material, especially swallowing. Use soap and water to thoroughly wash all skin and clothing contaminated with the liquid crystal material.

### **Unauthorized Service**

The installation of substitute parts or the installation of any instrument modification not authorized by Hewlett-Packard is specifically forbidden. The performance of such unauthorized service can negate the instrument warranty or any maintenance agreements.

Return the instrument to a Hewlett-Packard Sales and Service Office for authorized service and repair.



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## Printing History

New editions are complete revisions of this book. Update packages may contain new or additional material and be released between editions. See the the date of the current edition on the back cover of this book.

First Edition ..... June 1995

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## Additional Help

You can obtain additional assistance in the U.S. by calling:

Help Line at (719) 531-4567 (in the USA)

FAX (719)531-4506

E-Mail [ntd\\_helpline@hp0800.desk.hp.com](mailto:ntd_helpline@hp0800.desk.hp.com)

or Internationally by calling your local HP Sales Office.

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## **Mainframe Features Overview**

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## Introduction

Mainframe Features provides information about hardware features related to LAN and WAN Internet Advisor Products. Chapters 2 through 4 contain information common to all LAN and WAN Mainframe products while chapters 5 and 6 contain specific information relating to either LAN or WAN Internet Advisors.

This guide was created so you can look in one place and find information about common hardware features. When you place an order for any of our products, we will also include at least one "technology related User's Guide" in addition to this Mainframe Features Guide.

This guide is specific to products J2300A, J2301B/J2302B and J2522B/J2523B. The Mainframe Features guide is shipped with all Internet Advisor mainframes. All information is specific to the "B" versions. If you have an "A" version, disregard sections concerning: PC Specifications, display, PCMCIA, connecting to a switched ethernet segment, and specifications referring to weight, dimensions and display.

If you have a question or need related information about the technology of how the products work, look in your Users Guide, but if you have a hardware related question you should look in this manual.

Mainframe Features is divided into the following chapters:

- *Chapter 1 - Overview*  
This is an overview of the organization of Mainframe Features.
- *Chapter 2 - Common Hardware Features*  
This chapter describes hardware features including: PC Features, power supply, fuse, time and date, keyboard, mouse, the display, external VGA display, and printers common to LAN and WAN Internet Advisors.
- *Chapter 3 - PCMCIA and Internet Advisor*  
This chapter explains general information, compatibility and installation of PCMCIA cards.
- *Chapter 4 - Undercradle*  
This chapter explains how to disassemble and reassemble the undercradle and how to attach it to an Internet Advisor.
- *Chapter 5 - LAN Specific Features*  
This chapter contains specific information pertaining to LAN Internet Advisor and describes LAN features.
- *Chapter 6 - WAN Specific Features*  
This chapter contains specific information pertaining to WAN Internet Advisor and describes WAN features.
- *Appendix A - Software*  
This chapter explains how software comes factory loaded onto your Internet Advisor.
- *Appendix B - Specifications for Internet Advisor*  
This chapter details the physical characteristics, operating conditions and safety conditions for Internet Advisor.



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## Internet Advisor Supported Configurations

Undercradle / Mainframe	J2295A Empty Under- cradle	J2306A/ B Ethernet Interface	J2309A/B Eth/TR Interface	J2524A FDDI Interface	J2527A TIMS Interface	J2916A DS3/ATM Interface	J2917A E3/ATM Interface
J2301A/B T1 WAN	X	X	X	X	X	X	X
J2302A/B E1 WAN	X	X	X	X	X	X	X
J2522A/B Ethernet LAN	X			X	X		
J2523A/B Eth/TR LAN	X			X	X		

**Figure 1-1: Mainframe and Undercradle configurations**

\*NOTE: See the Product Configuration/Ordering Guide for products and options.

Interface/ Mainframe	Z3064 Add E1	Z3065 Add T1	J2909A DS3/ATM	J2910A E3/ATM
J2301A T1 WAN	X			
J2301B T1 WAN	X		X	
J2302A E1 LAN		X		
J2302B E1 LAN		X		X
J2522A/B Ethernet LAN				
J2523A/B Eth/TR LAN				

**Figure 1-2: Mainframe and Interface configurations**

\*NOTE: See the Product Configuration/Ordering Guide for products and options.

**Mainframe Features Overview**  
**Internet Advisor Supported Configurations**

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## **Common Hardware Features**

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## PC Specifications in the Internet Advisor

The WAN and LAN Internet Advisors (Models J2301B/J2302B and J2522B/J2523B) have an Intel80486 DX4, 100 Mhz processor with 16 MB of PC memory. Internet Advisor has a 1.44 MB flexible disk drive, a 256 MB hard drive (as standard) or 512 MB hard drive (as an optional feature). In addition, each model has an Integral mouse and serial and parallel ports.

The WAN ONLY Internet Advisor (Model J2300A) has an Intel80486, 25 MHz processor, 4 MB of PC memory, 127 MB hard drive, 1.44 MB flexible disk drive, Integral mouse, serial and parallel ports and an optional modem.

WAN models for use in the U.S.A. have internal modems. Internet Advisors version "B" have a PCMCIA slot. LAN Internet Advisors version "B" have two RJ45 connectors for receiving and transmitting data in a switched Ethernet environment.

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## Supply Power to the Internet Advisor

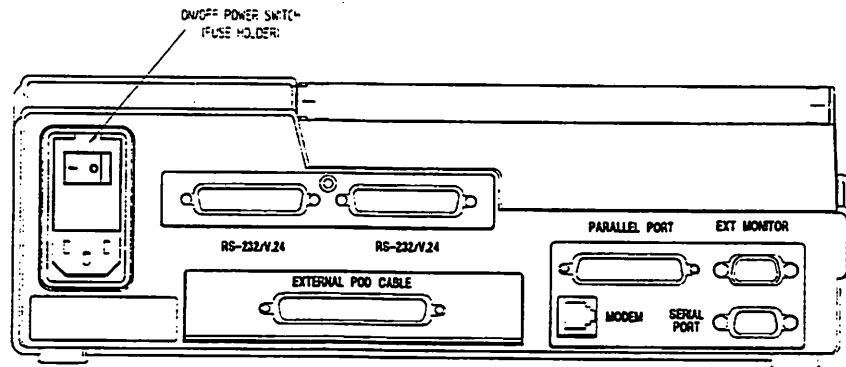
To start the Internet Advisor, plug it in and turn the power on. The on-off switch is located on the left side just above the power cord connector.

---

### CAUTION

The Internet Advisor comes with a three-conductor power cable that grounds the Internet Advisor when it is connected to an appropriate power outlet. Do not operate without ground protection.

Connect the AC power cord (either 115 V or 230 V) as shown below. The Internet Advisor automatically determines whether the power connection is 115V or 230V.



**Figure 2-1: Internet Advisor AC Power Connection**

If the Internet Advisor will not power-up, check the following:

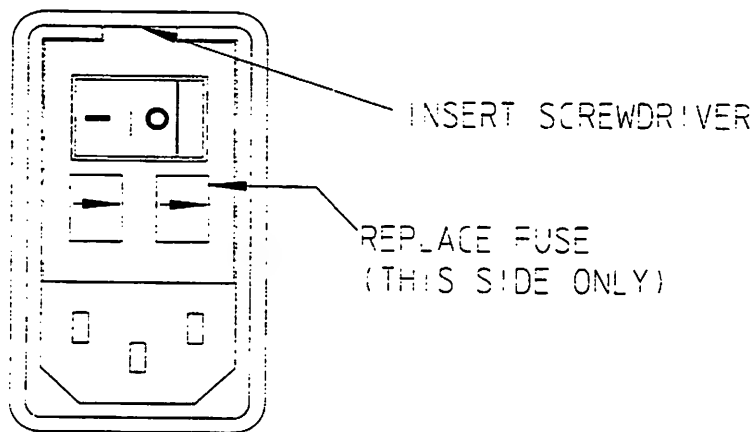
- Power cord connections are good
- AC power is available at the outlet
- Examine the fuse

---

## Checking the Fuse

If your instrument does not turn on, it may need a new fuse. Unplug the power cord, open the fuse holder and inspect the fuse checking to see if it is burned out. The part number for a replacement fuse is - HP part number 2110-0006. It is a 2Amp 250V rated fuse. If this replacement fuse burns out, please contact your local Hewlett-Packard Sales Office for assistance.

To check the fuse, use a screwdriver to pry out the fuse holder assembly from the side panel as shown in the following figure. If there are two fuse holders in the Line Filter Assembly, refer to the illustration for location of fuse in holder.



**Figure 2-2: Internet Advisor Fuse Location**

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## Setting the Time and Date

The time and date features are used for many of the applications and reports generated by Internet Advisor. It is important to set your local time and date when you receive your Internet Advisor because it is set to Mountain Standard Time as it leaves the HP factory.

Setting the time and date also updates system configuration files. The time and date are maintained even when power to the Internet Advisor is off. To set or reset the time and date, follow the steps below:

- Exit to the DOS prompt.

### **If you need help setting the time:**

1. Type `help time` and press **Enter** at the DOS prompt. Read information about setting time and the proper formats.
2. Type `time` and press **Enter** from the DOS prompt. You will be asked to enter the correct time.
3. Enter the correct time and press **Enter**.

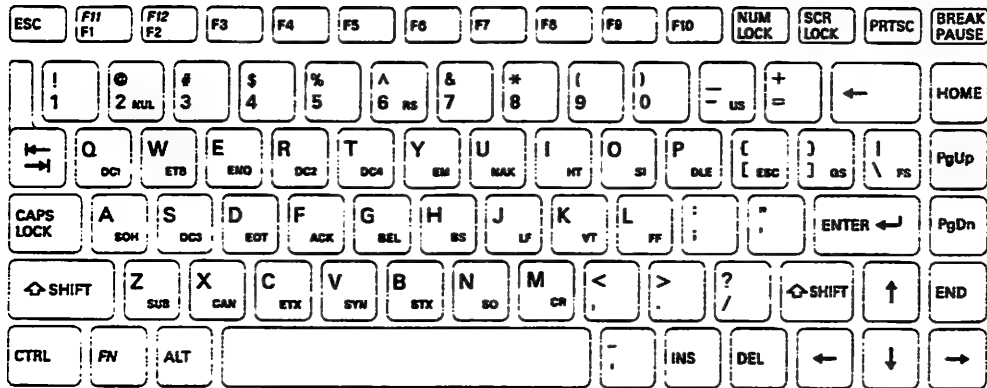
### **If you need help setting the date:**

1. Type `help date` and press **Enter** at the DOS prompt. Read information about setting date and the proper formats.
2. Type `date` and press **Enter** from the DOS prompt. You will be asked to enter the correct date.
3. Enter the correct date and press **Enter**.
4. Return to your Internet Advisor screen.



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## The Keyboard



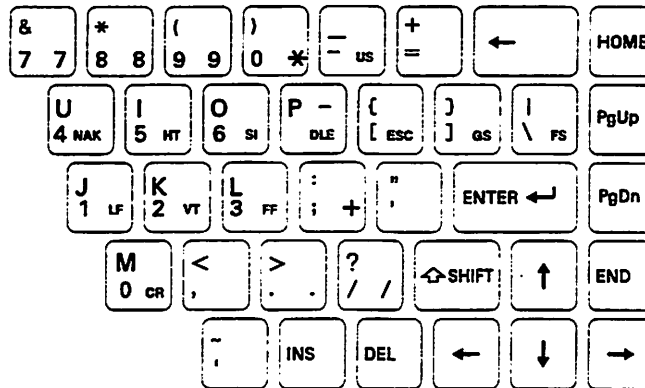
**Figure 2-3: Internet Advisor Keyboard**

The Internet Advisor keyboard is similar to a conventional keyboard. There are a few distinct features that are shown in the figure.

There are 12 function keys; **F11** and **F12** are used by holding down the **FN** key (on the bottom row, to the left of the spacebar) and then pressing the function key.

Control characters are available for Models J2300A, J2301A, J2302A, J2301B and J2302B. To use these characters, hold down the "CTRL" key and then press the control character you want. The control characters and their corresponding keys are shown in the previous figure.

By pressing the "Num Lock" key, you can enable the numeric keypad. The following figure shows the numeric keypad locations and numeric equivalents.



**Figure 2-4: Numeric Keypad**

## Keyboard Operation LEDs

There is a group of five LEDs that show keyboard functions when they are active. These are:

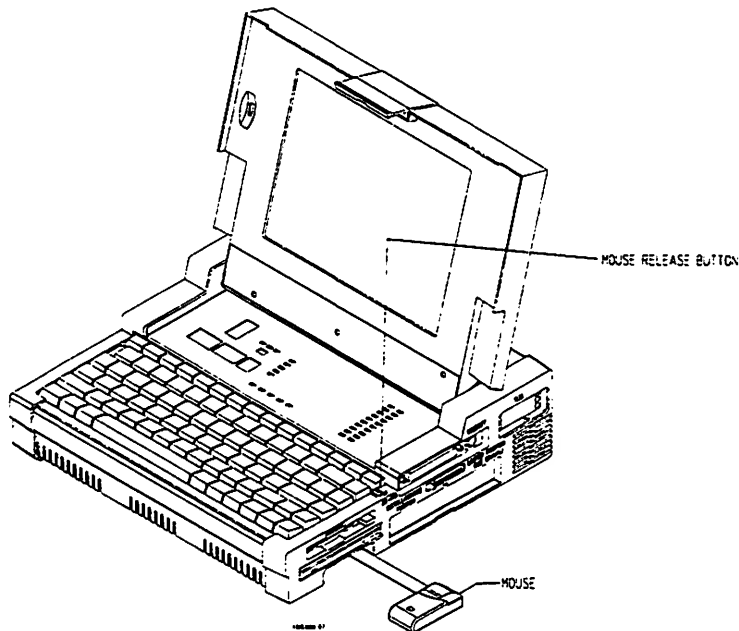
- Power On
- Caps Lock
- Num Lock
- Scroll Lock
- Hard Disk

---

## The Mouse

The mouse provided with the Internet Advisor is located on the lower right side panel as shown in the following figure. This mouse does not need a flat surface on which to operate. To use the mouse, press the Mouse Release Button located on the frame of the Internet Advisor, next to the **HOME** key. You can open the mouse by gently lifting the front of it. When you are finished, close it, and slide it back into the frame of the Internet Advisor. If the mouse should become disconnected, just press it back into its housing to reconnect it.

To establish the boundaries of the screen, you need to "set" the boundaries for the application you are using the mouse with. Do this by moving the mouse cursor back and forth and up and down to each corner of the screen where you will be using it. This "tells" the mouse its boundaries.



**Figure 2-5: Mouse Release Button and Mouse Location**

---

## Connecting a Serial Mouse

If you want to connect a Microsoft or compatible serial mouse perform the following steps.

- Set the Internet Advisor power switch to OFF.
- Connect the mouse cable to SERIAL PORT.
- Turn power on to the Internet Advisor and the mouse will be activated.

If you are using a serial mouse other than the one provided with the Internet Advisor or Microsoft serial mouse or compatible, you must install the software to drive it.

To install other mouse driver software:

1. Set the Internet Advisor power switch to ON.
2. Exit to DOS
3. Insert your diskette containing the mouse driver software into the disk drive and follow its installation instructions.

---

## Replacing the Built-In Mouse

If you need to replace the built-in mouse, order part number F1049-60901 from your Hewlett-Packard Sales and Service Office. To install the new mouse, press it into its housing to reconnect it.

## The Display

The LAN or WAN Internet Advisor has a 26.5 cm diagonal (10.4 inch) passive color LCD VGA or an optional 26.5 cm diagonal (10.4 inch) active matrix color VGA.

There is also a brightness control thumb-wheel adjustment located on the left side of the passive color LCD VGA display. This is an adjustment you can make to control the intensity of the display for different lighting conditions.

The J2300A, J2301A and J2302A Internet Advisor have a standard 9.6 inch passive LCD monochrome VGA display or an optional 8.4 inch active matrix VGA display.

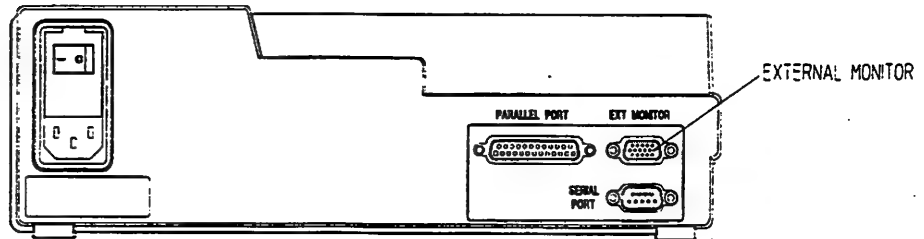
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## Connecting an External VGA Display

Optional equipment you can connect to the Internet Advisor:

- External Color Monitor
- Serial and Parallel Printers

You can connect an external display to the Internet Advisor. Several external monitors are available from Hewlett-Packard.



**Figure 2-6: External Monitor Port**

Set the Internet Advisor power switch to OFF.

Connect the monitor cable to the EXT MONITOR connector on the Internet Advisor. When you power-on the Internet Advisor it automatically detects if an external display is attached. It then automatically configures itself to drive the attached external display.

## Common Hardware Features

### Connecting an External VGA Display

The Internet Advisor can run internal and external displays simultaneously. If you have a LAN Internet you need to add the following line to your autoexec.bat file located at the c:\> prompt.

#### **Procedure:**

Exit to DOS.

1. To use the editor provided with DOS:  
at the DOS prompt, type `edit c:\autoexec.bat` (press return)  
Edit your autoexec.bat file to include this statements:

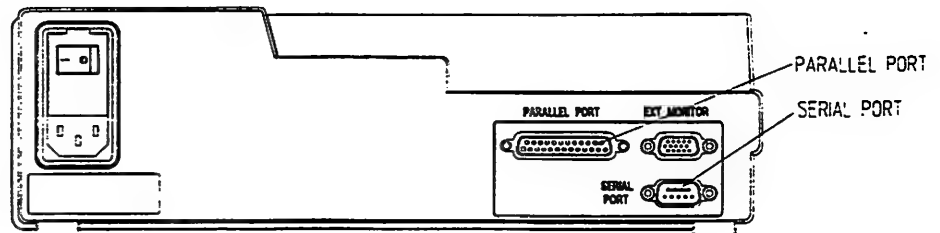
```
c:>setdisp both
```

2. Save this edited file.
3. Exit the editor.
4. Reboot your Internet Advisor

---

## Connecting a Printer

A printer can be connected to the Internet Advisor so that you can print files, help topics, and measurements results.



**Figure 2-7: Printer Connections**

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## Parallel Port Printers

The Internet Advisor is shipped with the printer output routed to the PARALLEL PORT connector on the side panel. If you have a parallel printer, connect it to the parallel port connector.



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## Serial Port Printers

If you need to use a serial printer, use the following steps to connect your printer to a WAN Internet Advisor.

1. From the Main Group of Toolkit,
2. Press **F3** (Printer Setup)
3. Cursor to Printer Port and select **COM 1**

If you need to use a serial printer, use the following steps to connect your printer to a LAN Internet Advisor.

1. Set the Internet Advisor power switch to OFF.
2. Connect your serial printer to the SERIAL PORT connector on the Internet Advisor's side panel.
3. Set the Internet Advisor power switch to ON.
4. Exit to DOS.
5. To use the editor provided with DOS:  
at the DOS prompt, type `edit c:\autoexec.bat` (press return)  
Edit your autoexec.bat file to include statements like the following:  
  
`MODE COM1:96,N,8,1,B`  
  
`MODE LPT1=COM1`
6. Your printer manual will give you more exact information.

The first command changes the parameters and protocol for the serial port on the interface card. The example above sets the baud rate, parity bit, number of data bits, stop bit, and the retry bit for the serial port. You must edit the command with parameters that match your printer. The second command reroutes the parallel port to the serial port.

7. Save this edited file.
8. Exit the editor.
9. Reboot the Internet Advisor.

**Common Hardware Features**  
**Connecting a Printer**

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**PCMCIA and the Internet Advisor**

## Introduction

The Personal Computer Memory Card International Association (PCMCIA) has created a standard for credit card size devices with memory, mass storage, and I/O functionality. The standard makes compatibility possible by defining mechanical, electrical, and software requirements.

The purpose of the PCMCIA slot in the Internet Advisor is to allow further flexibility in the Personal Computer section of the instrument. The primary use of this flexibility is intended for enhanced I/O capability with the Internet Advisor's software. This includes functions such as the modem, LAN interface, and SCSI interface. The original Internet Advisor family requires a J2295 Undercradle with an ISA bus card to obtain this same degree of flexibility. The new PCMCIA slot allows you to now carry all of your test tools, both WAN and LAN, under one handle with whatever I/O capability you desire.

While integrated I/O is the primary focus for the PCMCIA slot, it can also serve other purposes. Other PCMCIA solutions include removable mass storage, sound, speech, paging, encryption, global positioning, and even additional protocol testing.

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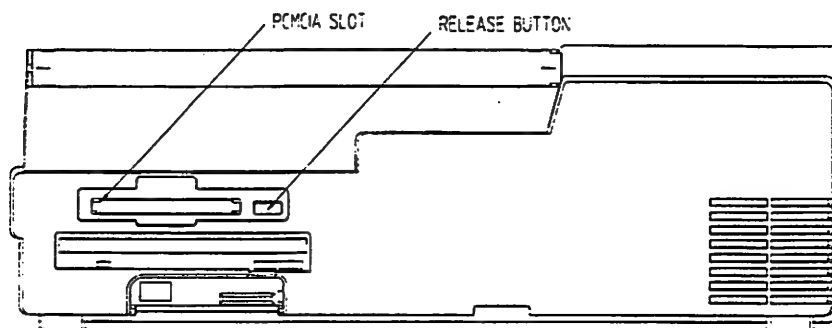
## Compatibility

The Internet Advisor conforms to PCMCIA specification 2.10. The slot is capable of receiving one Type I or Type II card. It does not support Type III or larger cards. The following kinds of cards are compatible with the Internet Advisor:

- ATA/IDE (Type II only)
- Fax/Modem
- Network Interface
- SCSI Interface
- Flash Memory
- SRAM Memory

---

## Installing a PCMCIA Card



**Figure 3-1: PCMCIA Slot Location**

The PCMCIA slot is located on the right side of the Internet Advisor, above the floppy disc drive as shown in the figure. All cards are keyed for correct installation. The card's label will typically face up or will explain which side is up. To insert a card, slide it in until you feel some resistance. Then push firmly, but gently, to ensure a firm connection. Never attempt to force the card into position. Within five seconds, you should hear an audible tone confirming that the system recognizes a card has been inserted. To remove the PCMCIA card from the slot, simply push in the ejector button and pull the card out. Again, an audible tone confirms that the system recognizes a card has been removed.

The Internet Advisor supports “plug and play operation” by allowing for hot swapping and by automatically providing the correct power (3V or 5V) to the installed card. You need not turn the power off to plug in or eject cards. However, to achieve full plug and play operation, application and device driver software must know how to deal with hot swapping. See [Tips for Using PCMCIA Cards](#) later in this chapter for more information.

---

## Software Configuration

The Internet Advisor uses PCMCIA drivers from SystemSoft Corporation. These drivers have been extensively tested by SystemSoft for compatibility with a wide range of cards and card vendors. These drivers are pre-installed in your Internet Advisor and are loaded from the config.sys file. The drivers provide the following functions:

- **Socket Service** - Hardware driver for PCMCIA controller chip
- **Card Services** - Common resource management for higher level software(clients), card recognition, card configuration
- **Client Services** - Device drivers for ATA drive cards and Modem cards

For ATA drive and Modem cards, the installed software is all that is necessary to use the cards. For other cards, there may be a client (higher level) application that communicates with the installed Card Services software or the application may attempt to bypass the entire installed driver software. Only cards with software conforming to the PCMCIA Card and Socket Services 2.1 specification will be compatible with the Internet Advisor software. Non-compliant cards may work, but will require you to set up a DOS dual boot capability to avoid device driver conflicts. Memory cards that are not ATA/IDE compatible, such as FLASH and SRAM, are not directly supported by Internet Advisor software due to extra memory requirements imposed by their client drivers.

The following two tables review the interrupt structure and I/O space of the Internet Advisor:



**PCMCIA and the Internet Advisor  
Software Configuration**

**Table 3-1: Interrupts**

<b>PC Functions</b>	<b>Interrupt</b>	<b>Analyzer Functions</b>	<b>Interrupt</b>
Keyboard Controller	1	LAN Advisor Undercradle	10
Reserved	2	FDDI Advisor Undercradle	plug & play
COM 2 (for WAN advisor with modem)	3	ATM Advisor Undercradle	none
COM 1	4	TIMS Undercradle	15
PCMCIA Controller	5		
Floppy Controller	6		
LPT1/Parallel	7		
Real Time Clock	8		
Video Controller/NIC in Lan Advisor	9		
Pointing Device	11		
Reserved	13		
Hard Disc	14		
Available to PCMCIA cards in WAN Advisors (INT 3 is also used by internal modem)	3,10,12,15		
Available to PCMCIA cards in LAN Advisors	3,12,15		
Available to Undercradle in WAN Advisors	10,12,15		
Available to Undercradle in LAN Advisors	12,15		

**Table 3-2: I/O Address Space**

<b>I/O Address</b>	<b>System/Analyzer Function</b>	<b>I/O Address</b>	<b>System/Analyzer Function</b>
000-00F	DMA Controller Register	278-27A	LPT1/Parallel
020-021	PIC #1	2E8-2EF	Reserve for COMM4
022-023	Configuration Register Index	2F0	LAN Analyzer Hardware
026-027	SMM Configuration Register	2F8-2FF	COMM2
040-043	Prog. Interval Timer Reg	300-30F	Pointing Device
060-	Keyboard Controller	320-32F	WAN Analyzer Hardware
061-	Port B	330-33F	TIMS Undercradle
064-	Keyboard Controller	376-377	IDE
070-	RTC Index & NMI Mask	3B4-3B5	Video Registers
071	RTC Data Port	3C0-3CF	Video Registers
080-08F	DMA Page Register	3D4-3D5	Video Registers
0A0-0AF	PIC #2	3DA	Video Registers
0C0-0DF	DMA Controller Register	3E0-3E1	PCMCIA Controller
0F0-0F1	NPU Error Reset	3E8-3EF	Reserve for COMM3
092-	FAST_RC/GATE A20	3F0-3F7	Floppy, Primary
110-12F	ATM Analyzer in Undercradle	5F0-5F7	IDE
150-16F	WAN/ATM Analyzer Hardware	3F6-3F7	IDE
170-177	IDE	3F8-3FF	COMM1
1F0-1F	IDE	570-577	IDE
238-23B	POINTING DEVICE	776-777	IDF
240-25F	Reserved for PCMCIA	7F6-7F7	IDF

## PCMCIA and the Internet Advisor Software Configuration

To work with the Internet Advisor's I/O space, Interrupt structure, and protocol analysis software, the PCMCIA drivers have been configured as follows:

- For WAN Internet Advisor software, the EMM386 extended memory driver is loaded in the config.sys file. It reserves 16 Kbytes for use by the PCMCIA drivers and allows for them to be loaded in high memory. The parameters for the EMM386 driver should not be changed.
- For LAN Internet Advisor software, the PCMCIA software operates in conventional 640 K memory.
- The PCMCIA controller is located at I/O address 3E0-3E1, with interrupt=5.
- PCMCIA MODEMs are located at I/O address 2E8-2EF(COM 4), with interrupt=3. For WAN Internet Advisors with an internal modem, the PCMCIA Modem and software will take over. Simply remove the PCMCIA Modem to use the internal one.
- ATA discs use available I/O space and reserve no interrupt.
- Network interface cards are located at I/O address 240, with interrupt=15.

When using the Internet Advisor software, you can use a PCMCIA ATA drive card as an alternate disc drive. In this situation, the card will appear as drive D: and will work in a completely transparent manner to the software with one exception. This drive is not compatible with the WAN Low Speed Analyzer software.

---

### NOTE

The configuration will be different in some ways for the WAN Internet Advisor software versus the LAN Internet Advisor software. Please reference your LAN Application Note or your WAN User's Guide (under "Configuring a Slave") for configuring Internet Advisor software for PCMCIA Operation.

---

## Tips for Using PCMCIA Cards

Besides hearing an audible indication for insertion and removal of cards, you can verify that the PC system has properly identified the card. To do so, run the program `cardinfo` in subdirectory `c:\pcmcia`. If you hear a single short tone after inserting the card, this is an indication that the software was not able to identify the card.

The following are specific tips for different types of cards:

### **ATA drive cards**

ATA drive cards will operate in a true “plug and play” fashion. Insert and remove at will.

### **Modem cards**

Modem cards will operate close to “plug and play”, but they must be inserted before the application is executed. This includes terminal emulation programs and the WAN Internet Advisor software. PCMCIA Modems have on-board serial port hardware which must be programmed by the application. If the modem is inserted after this programming occurs, then it won't work. Since the WAN Internet Advisor software is automatically executed at power on, the modem should be inserted before turning power on to the instrument.

### **Network Interface Cards (NIC)**

Network Interface Cards (NIC) are not “plug and play”. They must be inserted before power is turned on. As with modems, they have registers that must be programmed and this is typically done with a device driver executed from `config.sys` or `autoexec.bat`. If the NIC is inserted after this programming occurs, it won't work.

### **SCSI Interface cards**

SCSI interface cards are not “plug and play”. They must be inserted before power is turned on. As with NICs, they have registers that must be programmed and this is typically done with a device driver executed from `config.sys` or `autoexec.bat`. If the SCSI interface card is inserted after this programming occurs, then it won't work.

---

### **PCMCIA General Tips**

- Modify the `config.sys` file with caution because making changes can cause other problems so be certain before making any modifications.
- Except for ATA drive cards, always plug in cards before turning power on.
- Make sure the PCMCIA card is compatible with the 2.1 specification.
- Make sure the PCMCIA card is plugged in all the way by listening for a beep. It may be upside down or a type III. Type III cards are not supported.
- Do not load the card vendors socket or card services software unless you create a dual boot environment.
- You can't use the internal modem and a PCMCIA Modem at the same time.
- You can't use the internal NIC and a PCMCIA NIC at the same time.

---

**Undercradles for Internet Advisor**

---

## Attaching an Undercradle to Your Internet Advisor

You can add an undercradle to your Internet Advisor which lets you perform LAN, TMS, FDDI, or ATM testing. In addition, an empty undercradle is available which lets you use your own boards to do network testing.

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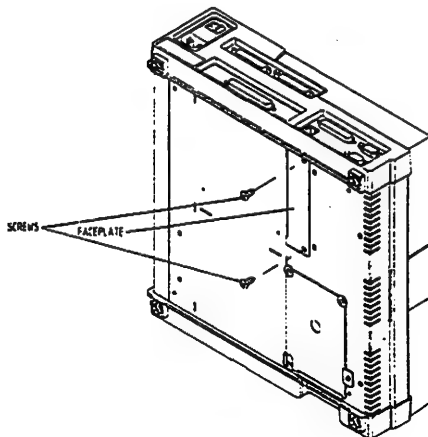
### WARNING

---

Be sure the Internet Advisor is turned off and disconnected from any power source before you begin any assembly or disassembly procedures.

Follow the steps below to add an undercradle to the Internet Advisor:

1. Turn off and disconnect the Internet Advisor from any power source.
2. Remove the two screws from the face plate on the bottom of the Internet Advisor. Save the screws you just removed if you ever want to re-attach the face plate.

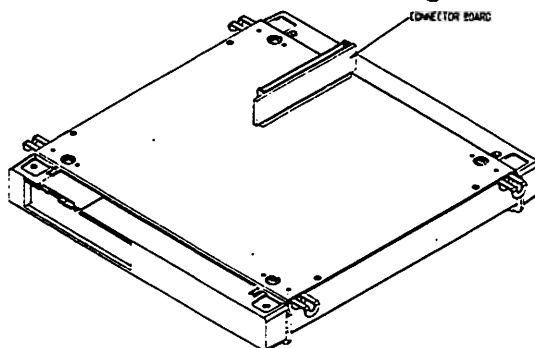


**Figure 4-1: Location of Faceplate on Internet Advisor**

3. Insert the connector board into the slot uncovered by the face plate.

## Undercradles for Internet Advisor Attaching an Undercradle to Your Internet Advisor

4. Position the undercradle with the four black feet down and the undercradle connector to your left. Two of the silver tabs should face you.
5. Make sure all four silver tabs are pulled out.
6. Place the Internet Advisor on top of the undercradle, matching the connector on the bottom of the Internet Advisor to the connector on the top of the undercradle.
7. Push in the four silver tabs, locking the undercradle to the Internet Advisor.



**Figure 4-2: Attaching the Undercradle to the Internet Advisor**



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## Removing the Undercradle from the Internet Advisor

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---

### **WARNING**

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Be sure the Internet Advisor is turned off and disconnected from any power source before you begin any assembly or disassembly procedures.

With the Internet Advisor turned off and unplugged:

1. Pull out the four silver tabs on the front and the back of the undercradle.
2. Lift the Internet Advisor away from the undercradle.
3. Remove the connector board from the slot of the Internet Advisor.

---

## The Empty Undercradle HP J2295A

The Empty Undercradle lets you add one or two PC cards to it.

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### **WARNING**

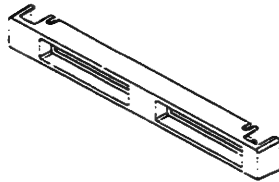
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Be sure the Internet Advisor is turned off and disconnected from any power source before you begin any assembly or disassembly procedures.

It is important to identify all the parts that make up the undercradle before you start to take one apart.

### **Left Side of Undercradle**

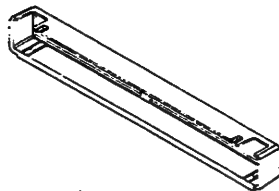
The undercradle left side is the plastic piece with indented slots. Note the top of the left side has open slots, and the bottom has rubber foot indentations.



**Figure 4-3: Left Side of Undercradle**

### **Right Side of Undercradle**

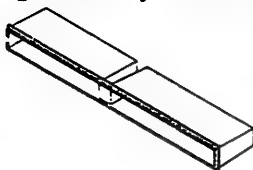
The undercradle right side is the plastic piece with two large cutouts. Note the top of the left side has open slots, and the bottom has rubber foot indentations.



**Figure 4-4: Right Side of Undercradle**

### Right Side Endcap Expander

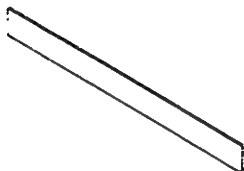
The undercradle right side endcap expander is the plastic insert that goes into the right side if you are using full-length PC cards.



**Figure 4-5: Right Side Endcap Expander**

### Right Side Flat Endcap

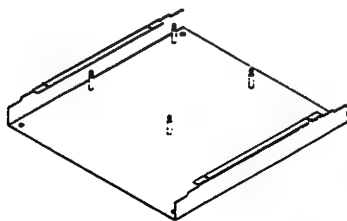
The undercradle right side flat endcap is the flat piece of metal that goes into the right side if you are using smaller size PC cards.



**Figure 4-6: Right Side Flat Endcap**

### Undercradle Bottom

The undercradle bottom is the metal part with four metal standoffs that hold the connector board. Note the front of the undercradle bottom is the curved edge nearest to the standoffs.



**Figure 4-7: Undercradle Bottom**

## Undercradle Top

The Undercradle top is the metal part with a slot and four silver tabs. Note this slot goes over the connector board which attaches to the Internet Advisor.

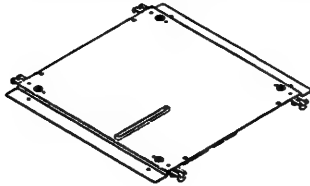


Figure 4-8: Undercradle Top

## Connector Board

The connector board is where the PC cards connect. It pushes on and off the standoffs in the undercradle bottom.

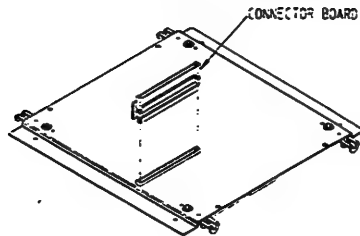


Figure 4-9: Connector Board

## Silver Tabs

The silver tabs are what hold the undercradle to the Internet Advisor.

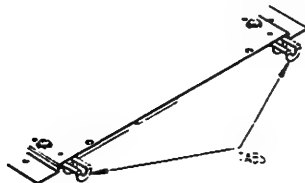


Figure 4-10: Silver Tabs

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## Taking the Undercradle Apart

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### WARNING

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Be sure that the Internet Advisor is turned off and disconnected from any power source before you begin any assembly or disassembly procedures.

Remove the undercradle from the Internet Advisor if it is attached. (See previous sections.)

1. Turn the undercradle upside down, with the four black feet facing up.
2. Carefully remove the four black rubber feet using a small flat screwdriver or some implement to pull them out of their seating.
3. Remove the four screws using a #10 Torx driver.
4. Turn the undercradle over.
5. Remove the eight screws (four flat-head and four pan-head) from the top of the undercradle.
6. Slide the two plastic endcaps off both sides, and lift off the top of the undercradle.

---

## Installing PC Cards

You can install up to two PC cards in the undercradle. They can be full-length or smaller. If you are using full-length boards, you will need to use the endcap expander. If you are installing smaller boards, you can use the flat endcap.

---

### CAUTION

---

Be sure to follow Electro-Static Discharge (ESD) procedures when handling any printed circuit boards.

With the undercradle disassembled:

1. Lift gently each corner of the connector board to disconnect it from the standoffs.

2. Turn the connector board over and fasten the PC Card(s) in the slots provided.
3. Press the connector board onto the standoffs. The PC Cards should be underneath the connector board as you secure it.

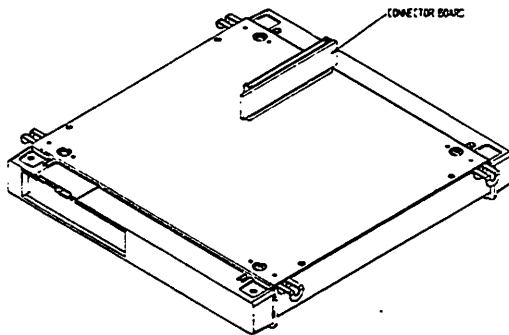
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### **Putting the Undercradle Back Together**

1. Place the top back on the undercradle aligning the slot in the top with the Internet Advisor connector. Fasten with the four flat-head screws.
2. On the side nearest to the Internet Advisor connector, slide the left side piece into place and secure it with four pan-head screws (two on the top and two on the bottom).

**Undercradles for Internet Advisor  
The Empty Undercradle HP J2295A**

3. If you are installing full-length PC cards in the undercradle, you need to insert the endcap expander into the right side before you place it on the undercradle. If you are installing smaller PC cards, you will need to insert the flat metal endcap in the right side before you place it on the undercradle.
4. Slide the undercradle right side piece into place and secure it with four pan-head screws (two on the top and two on the bottom).
5. Turn the undercradle over and replace the four black rubber feet into the little foot indentions.



**Figure 4-11: The Assembled Undercradle**

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## **LAN Specific Features**



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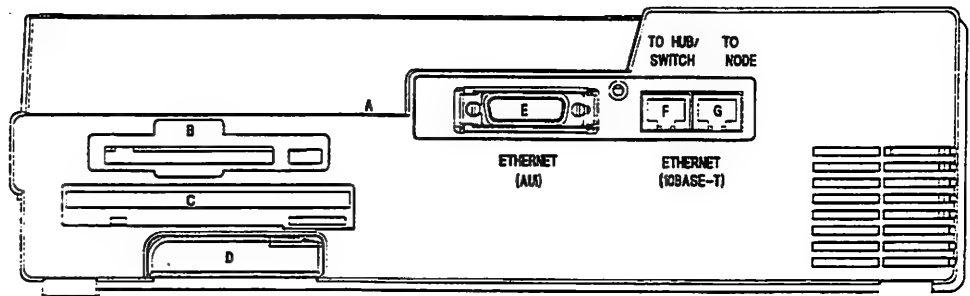
## **Introduction**

**You can connect the Ethernet and Token-Ring Internet Advisor to either an Ethernet network or a Token-Ring network.**

---

## LAN Internet Advisor Features.

All of the connections for the LAN Internet Advisor are located on the sides of the instrument.

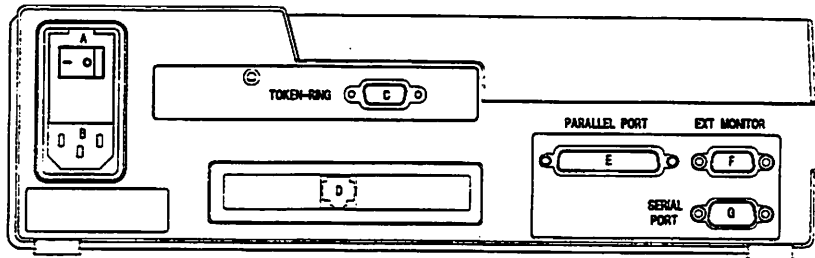


**Figure 5-1: Right Side of LAN Internet Advisor**

The right side of the LAN Internet Advisor contains the following:

- A. Mouse release button
- B. PCMCIA Slot
- C. 3 1/2 inch High Density Floppy Disk drive
- D. Mouse
- E. Ethernet connector (AUI)
- F. Ethernet connector (10BASE-T)
- G. Ethernet connector (10BASE-T)

**LAN Specific Features**  
**LAN Internet Advisor Features.**



**Figure 5-2: Left Side of LAN Internet Advisor**

The left side of the LAN Internet Advisor contains the following:

- A. On-Off Switch
- B. Power Cord receptacle
- C. Token-Ring connector
- D. Network Interface Card connector (10 BaseT)
- E. Parallel Port
- F. External Monitor
- G. Serial Port

---

## **LEDs**

There are three groups of Light Emitting Diodes (LEDs) showing various functions in the Internet Advisor. They are located on the top panel. Two groups are Status Indicator LEDs and the third group is the Keyboard Operation LEDs (see Common Hardware Features, Chapter 2, Keyboard).

### **Status Indicator LEDs**

There are two groups of LEDs which are status indicators for Ethernet or Token-Ring. Following are the indicators:

#### **Token-Ring Status Indicator LEDs:**

- TX
- RX
- INSERT
- WIRE FAULT

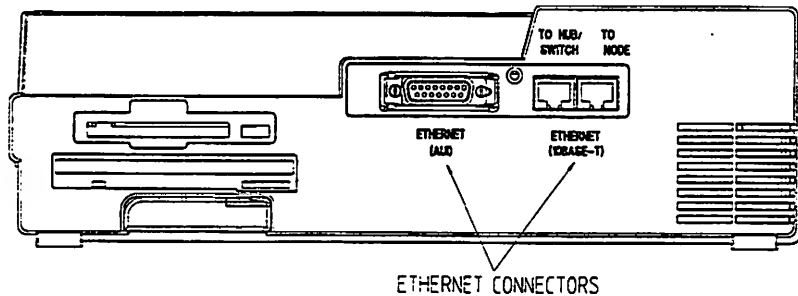
#### **Ethernet Status Indicator LEDs:**

- TX
- RX
- COLLISION
- NODE ACTIVE
- HUB/SWITCH ACTIVE

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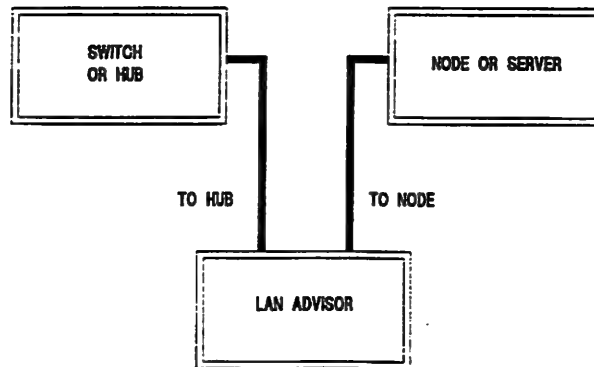
## Connecting to an Ethernet Network or Switched Ethernet Segment

The following products have identical Ethernet Interfaces; J2306B, J2309B, J2522B and J2523B. The figure shows the Ethernet connections. The Ethernet configuration in the Setup window must match the connector type you choose. See the on-line help in the Setup window for more information.



**Figure 5-3: Connecting to an Ethernet network**

To connect to an Ethernet segment, you can use either the 15-pin AUI or the Ethertwist connector (RJ-45) labeled "To Hub". The RJ-45 connector is used for 10BaseT and the AUI interface is used for either 10Base5 or 10Base2 depending on your choice of Media Access Unit (MAU).



**Figure 5-4: Block Diagram of Switched Ethernet Segment**

An Ethernet Hub is built into the Internet Advisor. The Ethernet signals are re-generated and the Internet Advisor can receive and transmit data in a switched Ethernet environment.

You can conveniently insert the LAN Internet Advisor into a switched Ethernet segment by using both RJ-45 connectors. The connection labeled "To Hub" is connected to one switch or hub. The connection labeled "To Node" is connected to a node or server. The LAN Internet Advisor will then be able to monitor all traffic between the switch and the node.

Also, you can monitor activity from the switch directly by using the "To Hub" connection only. Using the previous figure, the "To Node" connection is left open.

---

**NOTE**

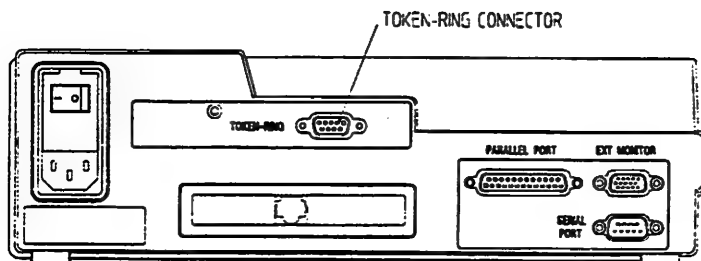
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Do not hook your Internet Advisor to two different ethernet segments as it will not work properly. Do not connect "To Node" to a hub or switch.

---

## Connecting to a 4/16 Mbps Token-Ring Network

To connect the Internet Advisor to a Token-Ring network, use the 9-pin Token-Ring connector. Make sure the 4/16 Mbps Line Speed parameter in the Internet Advisor Setup window matches the line speed of your Token-Ring network.

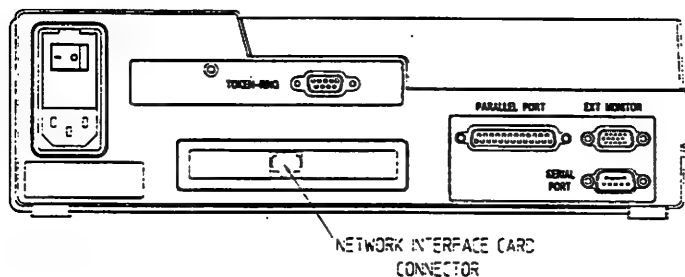


**Figure 5-5: Connecting to a 4/16 Mbps Token-Ring network**

---

## The EtherTwist Network Interface Card

The J2522B and J2523B Internet Advisor can function as a station on the network using the 10BaseT connector on the HP EtherTwist Network Interface Card (NIC). This card is intended primarily to be used as the network connection when operating the analyzer remotely. It can also be used as a standard network interface for any other operation using the DOS platform such as file transfer and electronic mail.



**Figure 5-6: The EtherTwist Network Interface Card**

This card is already installed and uses the following hardware configuration:

- Interrupt request line: IRQ 9
- IO address: 300 Hex
- DMA channel: 5

This configuration should not be changed.

Please refer to the *HP EtherTwist PC LAN Adapter User's Guide NC/16 TP* supplied with your Internet Advisor for more information on the EtherTwist Network Interface card.



---

## Configuring the Print Screen Key

If you want to capture and print a screen from the LAN Internet Advisor, you need to configure the Print Screen key by doing the following steps:

1. Set the Internet Advisor power switch to ON.
2. Set the printer power switch to ON.
3. Press **F10** to display the Utilities window.
4. Open the PC Hardware Configuration window. Use the arrow keys to highlight PC Configuration and then press **Enter**.
5. Use the arrow keys to highlight the Print Screen Printer field. Press **F3** (Next Pane) to move the focus to the pane displaying the printer types.
6. Select the printer type using the arrow keys to highlight the type of printer you have connected to the Internet Advisor. Press **Enter**.
7. Select your print Screen Output field using the arrow keys to highlight. Press **Enter**. Select Printer to enable printing the screen, or you can disable the function. If Print Screen Output is enabled, when you press the PRINT SCREEN key, your print screen driver will capture the screen and output it to the printer.
8. Press **F5** (Close) to close the window and save the values in the Configuration fields.

You can also use your own application or utility program to capture the Internet Advisor's screen and output it to a printer. Refer to the *User Print Screen Driver* on-line help topic for information on how to implement this. The *User Print Screen Driver* on-line help topic can be found by accessing the Utilities window, selecting PC Configuration, and then Help.

LAN Specific Features  
**LAN Internet Advisor Features.**

**LAN Specific Features**  
**LAN Internet Advisor Features.**

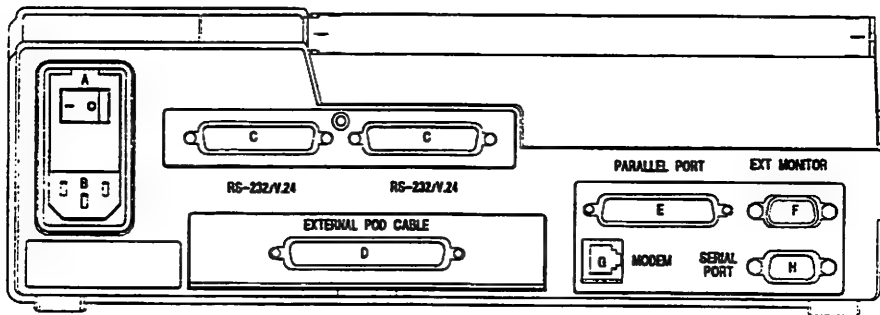
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**WAN Specific Features**

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## WAN Internet Advisor Features

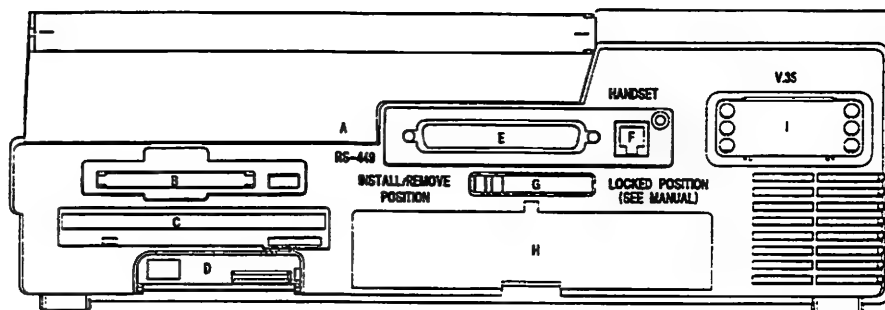
All of the connections for the WAN Internet Advisor are located on the sides of the instrument.



**Figure 6-1: Left Side of WAN Internet Advisor**

The Left side of the WAN Internet Advisor contains the following:

- A. On-Off Switch
- B. Power Cord receptacle
- C. Two RS232/V.24 connectors
- D. External Interface connector
- E. Parallel Port
- F. External Monitor
- G. Modem (licensed for operation in U.S.A. only)
- H. Serial Port



**Figure 6-2: Right Side of WAN Internet Advisor**

The right side of the WAN Internet Advisor contains the following:

- A. Mouse release button
- B. PCMCIA Slot
- C. 3 1/2 inch High Density Floppy Disk drive
- D. Mouse
- E. RS-449 connector
- F. Handset connector
- G. Locking Switch for interface modules
- H. Interface module
- I. V.35 connector

---

## **Interface Modules Types**

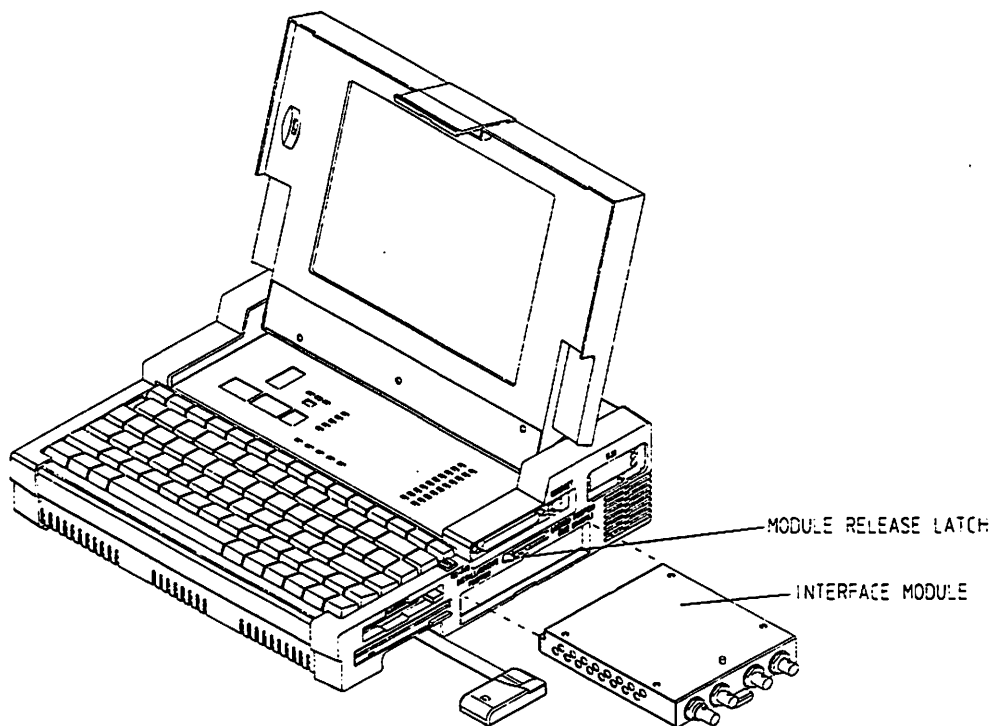
There are several Interface Modules available for use with the WAN Internet Advisor Series. One type of Interface Module slides into the Internet Advisor and another type inserts into an undercradle.

---

## Install or Remove Interface Modules from the Mainframe

To install an Interface Module, first make sure the “Module Release Latch” is in the Install/Remove Position. Then slide the module into the opening of the Internet Advisor and push it into place until it is seated and the “Module Release Latch” moves to the Locked Position.

To remove an Interface Module, slide the “Module Release Latch” towards the left (Install/Remove Position) and pull the Interface Module out of the Internet Advisor.



**Figure 6-3: Install or Remove Interface Module - Internet Advisor**

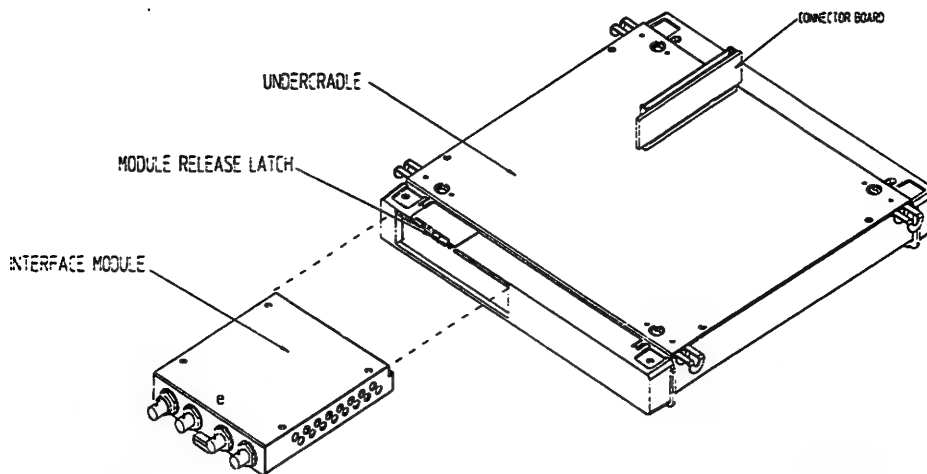


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## Install or Remove Interface Modules in the Undercradle

To install an Interface Module into an undercradle, slide the module into the opening of the undercradle and push it into place until it is seated. See the following figure for more details.

To remove an Interface Module, slide the "Module Release Latch" towards the left and pull the Interface Module out of the undercradle.



**Figure 6-4: Install or Remove Interface Module - Undercradle**

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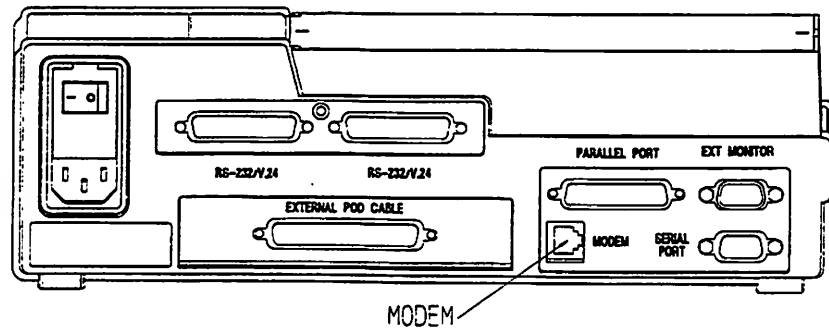
## Standard Connectors

The Internet Advisor comes with standard connectors for:

- RS-232C/V.24
- RS449
- V.35

For pin assignments please see your User's Guide.

## The Internal Modem



**Figure 6-5: Location of Modem Connector**

There is an optional internal data/fax modem available for Internet Advisors sold in the U.S.A. It may be used for remote control and file transfers. As a DOS or Windows device it appears as COM2 and uses IRQ=3.

### NOTE

The modem requires an analog phone line and is not compatible with typical digital PBX systems.

The modem can be connected to a standard telephone line through an RJ-11 phone jack. It conforms to recommendations CCITT V.32 bis, V.32, V.22 bis, V.22, Bell 212, V.21, and Bell 103.

Transmission rates for the modem are up to 14.4 kbps (19.2 kbps for fax). The modem and fax operate with standard AT commands.

The modem is compatible with many commercially available software applications. Check the vendor's specifications to see if a particular application is compatible with the modem's capabilities.

The modem is designed to meet United States telephone standards as set by FCC Part 68.

## WAN Specific Features The Internal Modem

### FCC Notice to Users

UPON REQUEST ONLY, you must provide the following data to your telephone utility company (telco):

Notice of intention to install or permanently remove an FCC Part 68 registered device or system, and the  
\*FCC Registration Number.

\* The ringer Equivalence Number (REN) (see device label). Note that if several devices are connected to the same line, the RENs must not add up to more than 5.0 (A or B). This REN figure is important to your telco.

\* The (USOC) jack type to be provided by the telco. Typically this will be RJ-11C/W for single lines.

This device may not be used on telco-operated coin phone lines. Party line and privately owned coin-phones are subject to local State regulatory policies, and possible additional State special requirements.

The telco has the right to make changes to their network which may affect the operation of your equipment, provided you are given adequate advance written notice to permit correct operation.

In cases of operational problems, disconnect your unit by removing the modular plug from the telco jack. If your regular phone (or other device or system) still works properly, your internal modem may have a problem and must remain disconnected and (officially) serviced or returned for repairs. If upon the above disconnection your regular service still has problems, notify your telco that they may have a problem. Request prompt service at no cost to you the user. If a problem is found in premises wiring not telco-installed, you are subject to a service charge. If a fault is in telco installed wiring, you may be subject to a service call charge.

Unless otherwise noted in the User's Manual (e.g. fuses, etc.), user may not under any circumstances (in or out of warranty) attempt any service, adjustments, or repairs on this unit. It must be returned to the factory or authorized U.S. service agency for all such work. Locations of authorized U.S. service centers are listed in this user's manual.

Special FCC rules apply to equipment connected behind a PBX or KTS.

\* The \*-flagged items above are noted on the equipment's FCC compliance label.

---

## Modem AT Command Set

The standard AT Command Set is used by DTE's to communicate with modems. A typical command string begins with the ASCII "A" and "T" or "a" and "t". The modem uses these first two characters to determine the data rate, number of bits, and type of parity which the DTE is employing in its communication. The modem then buffers the commands string in its RAM (memory) until a carriage return, [CR], is transmitted. Once the [CR] is received, the modem begins to execute, in order, all of the commands in the string. The number of characters in this string should not exceed 40. If the modem encounters an illegal command, a command that cannot be executed, or more than 40 characters, it immediately aborts the execution of the command string and issues an ERROR message to the DTE. If the command string is correct, the modem executes all commands and sends an OK message to the DTE.

Many of the commands require a numeric parameter. If this parameter is missing, the modem automatically assumes that the parameter is 0, if appropriate. If the parameter exceeds the expected values, the modem either aborts and issues an ERROR or it extracts the modulus from the parameter based on the greatest expected value. (For example; if n is expected to be 0,1,2,3, then  $n=5$  will be treated as  $n=5 \text{ Mod } 4=1$ .) This response varies from modem to modem.

The modem has two factory default profiles and two additional profiles that can be programmed into a nonvolatile memory. To configure the modem to one of the factory defaults, issue one of the following commands:

AT&FO[CR]      For the primary profile

AT&F1[CR]      For the secondary profile

To store or recall a custom profile, use the following commands: Zn, &Wn, &V, or &Yn. These commands are described in Table 6-1.

Modems are always in one of two modes of operation. The modem enters into Data Mode once a connection has been established with a remote modem. In Data Mode, any data transmitted from the DTE to the modem is modulated and transmitted to the remote modem; and, similarly, any data that the modem transmits to the DTE has been received from the remote modem and demodulated. The modem can be in Data Mode only when the modem has established a

## WAN Specific Features

### The Internal Modem

communications link with a remote modem. The only exception to this is during diagnostic tests (See the &Tn commands in Table B-1). At all other times, the modem is in Command Mode. When in Command Mode, the modem responds to AT commands issued from the DTE.

While in Data Mode, if it is necessary to issue commands to the modem without severing the communications link to the remote modem, an escape sequence may be issued from the DTE to the modem. The escape sequence consists of three escape characters followed by an AT command. If the modem uses a Hayes command set, the escape sequence must have a guard time before and after the three escape characters. The escape character is defined by register S2 (default is +, ASCII 043) and the guard time is defined by register S12 (default is 1 second, 50 x 0.02s). The default escape sequence is:

(1s) +++ (1s) AT...

Once the modem has been shifted into Command Mode during a data link, the modem can be returned to Data Mode with the O command.

---

#### NOTE

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When operating the internal modem at 9600/14400 bps DTE speed and attempting to connect at 2400 bps, use this command: AT%B2400[CR].

---

### Modem AT Commands and Descriptions

Table 6-1 is a list of the available AT commands for the Internet Advisor's internal modem. The default settings for the primary factory profile are shown in bold type.

**Table 6-1: AT Modem Commands and Descriptions**

<b><u>Command</u></b>	<b><u>Description</u></b>
A/	Repeat last command – This is the only command that is not preceded by "AT"
A	Answer command – The Modem will immediately go off-hook, wait 2 seconds, transmit Answer tone, and wait for response from an Originating modem in order to establish a data connection
Bn	Communication standard option 0: Selects CCITT V.22 mode when the modem is at 1200 bps, and CCITT V.21 when the modem is at 300 bps 1: Selects Bell 212A when the modem is at 1200 bps, and Bell 103 when the modem is at 300 bps 2: Selects V.23 receive 1200 bps, transmit 75 bps 3: Selects V.23 transmit 1200 bps, receive 75 bps
Cn	Carrier control option (Dummy command) 0: Returns ERROR 1: Normal transmit carrier switching
D	Dial command -- This command may only be followed by dialing digits (0-9, *, #, A-D) or dial modifiers. Modem goes off-hook, dials the dialing digits and waits for Answer tone in order to establish data connection Dial Modifiers: P Pulse dial the following digits R After dialing, modem transmits Answer tone and awaits response from Originating modem S=n Dial telephone number stored in location n (n=0-3) See &Zn command T Tone dial the following digits W Wait for dial tone ; Pause for 2 seconds ! Flash hook - modem pulses on-hook @ Wait for quiet answer for telephone systems that do not provide a dial tone; Enables NO ANSWER Result code 8 ; Return to idle state (command mode) after dialing
En	Off-line echo command – When in command mode, modem echoes all data from TXD to RXD 0: Echo disabled 1: Echo enabled

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<b><u>Command</u></b>	<b><u>Description</u></b>
<b>Fn</b>	On-line echo command (Dummy Command) 0: Returns ERROR 1: On-line echo disabled
<b>Hn</b>	Switch hook control 0: Go on-hook 1: Go off-hook
<b>In</b>	Identification/checksum option 0: Modem reports product code 1: Modem reports ROM checksum 2: Returns OK
<b>Ln</b>	Speaker volume 0: Lowest speaker volume 1: Low speaker volume 2: Medium speaker volume 3: High speaker volume
<b>Mn</b>	Speaker Control 0: Speaker always off 1: Speaker on until carrier present 2: Speaker always on 3: Speaker off during dialing and on until carrier
<b>On</b>	Go on-line – If the modem has established a data connection but is currently in command mode, this command switches the modem back to data mode 0: Returns modem to a previously established state. 1: Begins an equalizer retrain sequence, then returns to on-line state.
<b>P</b>	Enable pulse dialing (See D command)
<b>Qn</b>	Result code display option – This command enables or disables the modem's responses (or Result Codes) to the AT commands 0: Result codes enabled 1: Result codes disabled 2: Result codes enabled in ORIGINATE mode only

<b>Command</b>	<b>Description</b>
<b>Sn=x</b>	Write to an S register -- Assigns the value "x" to S register number "n" n = 0-27 x = 0-255
<b>Sn?</b>	Read an S register n = 0-27
<b>T</b>	Enable tone dialing (See D command)
<b>Vn</b>	Result code form -- Modem will respond to AT commands with either English phrases or numeric codes 0: Numeric form 1: Verbose form
<b>Wn</b>	Select extended result code (Also see Xn and \Vn commands) 0: CONNECT result code reports DTE speed (/REL result codes controlled by \Vn command) 1: CONNECT result code reports DTE speed; enables the CARRIER and PROTOCOL extended result codes (Overrides the \Vn command and disables the /REL codes) 2: CONNECT result code reports DCE speed (/REL result codes controlled by \Vn command)
<b>Xn</b>	Result codes and call progress option -- For n=1-4, specific CONNECT codes are enabled/disabled by Wn and \Vn commands 0: Enables Result codes 0-4 only; Disables busy and dial tone detect codes 6 & 7; Overrides Wn and \Vn commands 1: Enables Result codes 0-4 and CONNECT codes; Disables busy and dial tone detect codes 2: Enables Result codes 0-4; dial tone detect (code 6), and CONNECT codes; Disables busy detect (code 7) 3: Enables Result codes 0-4, busy detect, and CONNECT codes; Disables dial tone detect 4: Enables all Result codes (pending Wn and \Vn commands)
<b>Yn</b>	Long-space disconnect 0: Disable long-space disconnect 1: Enable long-space disconnect



## WAN Specific Features

### The Internal Modem

<b><u>Command</u></b>	<b><u>Description</u></b>
<b>Zn</b>	Recall stored profile (See &Wn command) 0: Modem resets and conforms to User Profile 0 1: Modem resets and conforms to User Profile 1
<b>&amp;Cn</b>	Data carrier detect (DCD) option 0: State of carrier from remote modem is ignored; DCD output is always active 1: State of carrier from remote modem is tracked; DCD output reflects state of the carrier
<b>&amp;Dn</b>	Data terminal ready (DTR) option 0: Modem ignores DTR input 1: On-to-off DTR transition causes modem to switch from data mode to command mode 2: On-to-off DTR transition causes modem to go on-hook, switch to command mode, and disable auto-answer mode 3: On-to-off DTR transition causes modem to reset 4: On-to-off DTR transition causes modem to deliver all buffered data, hand-up and switch to command mode
<b>&amp;Fn</b>	Load factory settings 0: Recall factory settings as active configuration 1: Recall secondary factory settings as active (Same as &FO except: \C2 \G1 \J0 \Q1 \W7 \V1)
<b>&amp;Gn</b>	Guard tone option 0: No guard tones 1: 550 Hz guard tone 2: 1800 Hz guard tone
<b>&amp;Jn</b>	Auxiliary relay control (Dummy command) 0: Returns ERROR 1: Returns OK
<b>&amp;Mn</b>	Asynchronous mode (Dummy command) 0: Asynchronous mode

<b>Command</b>	<b>Description</b>
<b>&amp;Pn</b>	Dial pulse ratio <b>0:</b> Make = 39%, Break = 61% for use in the United States <b>1:</b> Make = 33%, Break = 67% for use in certain other countries
<b>&amp;Qn</b>	Communications mode option <b>0:</b> Asynchronous mode <b>1:</b> Reserved <b>2:</b> Reserved <b>3:</b> Reserved <b>4:</b> AutoSync mode
<b>&amp;Rn</b>	CTS/RTS option – This command is overridden when serial port hardware flow control is enabled. See \Qn command <b>0,1:</b> CTS output is always active <b>2:</b> CTS output mimics RTS input <b>3:</b> CTS output follows CCITT recommendations
<b>&amp;Sn</b>	Data set ready option <b>0:</b> DSR output circuit always on <b>1:</b> DSR output active during handshaking and while data linked to another modem. DSR output inactive in test mode, command mode, or when carrier is lost
<b>&amp;Tn</b>	Diagnostic test commands <b>0:</b> Terminate test <b>1:</b> Local analog loopback (transmit and receive in low channel). The modem's low freq. modulator is looped back to the demodulator so that data presented on the TXD input is returned to the RXD output for comparison <b>2:</b> Local analog loopback (Transmit and receive in high channel). The modem's high frequency modulator is looped back to the demodulator such that data presented on the TXD input is returned to the RXD output for comparison <b>3:</b> Local activated remote digital loopback (RDL). The data received from a remote modem is transmitted back to the remote modem. This command can only be activated after a data connection with a remote modem has been established <b>4:</b> Grant request from remote for RDL. Data connection must be previously established <b>5:</b> Deny request from remote for RDL test <b>6:</b> Remote digital loopback test. Requests that remote modem activate RDL <b>7:</b> Remote digital loopback with self-test <b>8:</b> Local analog loopback with self-test

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<b><u>Command</u></b>	<b><u>Description</u></b>
<b>&amp;V</b>	View active configuration and stored profile – Modem will display current configuration, configuration stored in profile 0, configuration stored profile 1, and stored telephone numbers 0-3 (See Zn, &Wn, and &Zn commands)
<b>&amp;Wn</b>	Store active profile 0: Save active configuration as user profile 0 1: Save active configuration as user profile 1
<b>&amp;Yn</b>	Select stored profile on powerup (See &Wn command) 0: Recall user profile 0 on powerup 1: Recall user profile 1 on powerup
<b>&amp;Zn=x</b>	Store telephone number "x" to location "n" (D command and S dial modifier) x= 0-9,A,B,C,D,#,*,T,P,R,W,@,comma, !,; n = 0-3
<b>\An</b>	Block size – Sets the greatest number of characters that may be included in the data group that is tested for errors 0: Set maximum block size = 64 characters 1: Set maximum block size = 128 characters 2: Set maximum block size = 192 characters 3: Set maximum block size = 256 characters
<b>\Bn</b>	BREAK transmission – This is similar to pressing BREAK on your keyboard (See \Kn command) 0: BREAK of 300 ms is transmitted 1-9: BREAK is transmitted with duration of n x 100 ms

<b><u>Command</u></b>	<b><u>Description</u></b>
<b>\Cn</b>	<p>Set autoreliable buffer – After the modem establishes a data connection with a remote modem, the modems will transmit data (including SYN character) to attempt the error correction protocol. The autoreliable buffer can be used to buffer this data prior to sending it to the DTE while the modem determines whether it is error correction setup data.</p> <p>0:      <b>Does not buffer</b></p> <p>1:      Buffers data on answering modem for up to 4 seconds. If a SYN character is detected within the first 200 characters, reliable mode is attempted. If a SYN character is not detected, modem switches to normal mode and the buffered characters are passed to the serial port.</p> <p>2:      Does not buffer data on answering modem. Modem will attempt reliable connection upon receipt of SYN character. If an autoreliable fallback character, as defined by %A, the modem switches to normal mode.</p>
<b>\Gn</b>	<p>Set modem port (modem-to-modem) flow control</p> <p>0:      <b>Disable flow control</b></p> <p>1:      <b>Enable XON/XOFF flow control</b></p>
<b>\Hn</b>	<p>HP ENQ/ACK protocol – Modem can only emulate the HP ENQ/ACK protocol while in MNP reliable mode. Note: Each data block should not exceed 250 characters. (See \An command)</p> <p>0:      <b>Disable HP ENQ/ACK protocol</b></p> <p>1:      <b>Enable HP ENQ/ACK emulating terminal</b></p> <p>2:      <b>Enable HP ENQ/ACK emulating host</b></p>
<b>\Wn</b>	<p>Serial port rate adjust option</p> <p>0:      <b>Disable port rate adjust.</b> Serial port is independent of the connection. Note: To ensure highest data throughput when using data compression, always disable the port rate adjust</p> <p>1:      <b>Enable port rate adjust.</b> After a connection is made, the serial port adjusts to the rate of the connection</p>

## WAN Specific Features

### The Internal Modem

<b>Command</b>	<b>Description</b>
<b>\Kn</b>	Set break control -- A BREAK may come from three places: Local DTE (DTE), Remote Modem (RM), or Manually from the \Bn Command (\Bn). The response of the modem, including whether it transmits the BREAK, depends upon the source of the BREAK
0:	DTE Enter command mode, do not TX BREAK RM Purge buffers, relay BREAK to DTE \Bn Purge buffers and TX BREAK
1:	DTE Purge buffers, TX BREAK RM Purge buffers, relay BREAK to DTE \Bn Purge buffers and TX BREAK
2:	DTE Enter command mode, do not TX BREAK RM Relay BREAK to DTE immediately \Bn TX BREAK immediately
3:	DTE TX BREAK immediately RM Relay BREAK to DTE immediately \Bn TX BREAK immediately
4:	DTE Enter command state, do not TX BREAK RM Relay BREAK to DTE in sequence with data \Bn TX BREAK in sequence with data
5:	DTE TX BREAK in sequence with data RM Relay BREAK to DTE in sequence with data \Bn TX BREAK in sequence with data
<b>\Wn</b>	Set operating mode
0,1:	Normal mode - No error correction or data compression
2:	Set MNP reliable mode - Will only connect with MNP
3:	Set MNP autoreliable mode - Connects with MNP or in normal mode
4:	Set LAPM reliable mode - Will only connect with LAPM
5:	Set LAPM autoreliable mode - Connects with LAPM or in normal mode
6:	Set reliable mode - Will connect with LAPM or MNP, with priority given to LAPM
7:	Set autoreliable mode - Connects with LAPM, with MNP, or in normal mode
<b>\Qn</b>	Set serial port (modem-to-DTE) flow control -- With unidirectional flow control, the modem will use either CTS or XON/XOFF to govern the data flow from the DTE. With bidirectional flow control, the modem will control the data flow from the DTE and the DTE will control the data flow from the modem by using RTS or XON/XOFF (Q2, Q3, Q5, & Q6 will override the &Rn command)
0:	Disable flow control
1:	Enable bidirectional XON/XOFF flow control
2:	Enable unidirectional hardware flow control
3:	Enable bidirectional hardware flow control
4:	Enable unidirectional XON/XOFF flow control
5:	Enable unidirectional hardware flow control with CTS off until CONNECT
6:	Enable bidirectional hardware flow control with CTS off until CONNECT

<b><u>Command</u></b>	<b><u>Description</u></b>
<b>\S</b>	Connection inquiry – Modem responds with protocol engaged (error correction), DTE to modem data rate, and link rate (modem to modem data rate)
<b>\Tn</b>	Set inactivity timer – If no data is sent or received for n minutes, the modem hangs up. Note: This feature is inactive during an AutoSync connection 0: Timer disabled 1-90: Length in minutes
<b>\Wn</b>	Modify result code format (See Wn and Xn commands) 0: Disable /REL connect codes 1: Enable /REL connect codes 2: -LAPM and -MNP added to /REL connect codes
<b>\Xn</b>	Set XON/OFF pass-through (See \Gn and \Qn commands) 0: Process flow control characters without transmitting these characters to the DTE or remote modem 1: Process flow control characters and pass them through to the terminal or remote modem so they can, in turn, process the characters
<b>\Z</b>	Switch to normal mode – Discontinue error correction (This command works with MNP only. When in LAPM mode, modem returns ERROR)
<b>%An</b>	Set autoreliable fallback character n = 0-127 (ASCII character) Default: 000 (None)
<b>%Bn</b>	Modem port rate – The modem will attempt its modem-to-modem connections at this speed or will negotiate to a slower speed n = 300, 1200, 2400, 4800, 7200, 9600, 12000, 14400 Default: 9600 (for CH1792); 14400 (for CH1793)
<b>%Cn</b>	Data compression 0: No compression 1: Enable data compression (V.42bis in LAPM mode, MNP 5 in MNP mode)

## WAN Specific Features

### The Internal Modem

<b><u>Command</u></b>	<b><u>Description</u></b>
<b>%En</b> Auto-retrain 0:     Disable auto-retrain 1:     Enable auto-retrain	
<b>%Mn</b> Minimum modem port rate -- If remote modem cannot communicate at this minimum data rate, connection will not be established n = 300, 1200, 2400, 4800, 7200, 9600, 12000, 14400 Default: 300	
<b>%V</b> Display firmware version	
<b>+FCCLASS?</b>	Service class indication -- Modem responds with the class of operation with which it is ready to connect. A response of 000 indicates it will communicate as a data modem (This is the default mode). A response of 001 indicates Class 1 FAX communication.
<b>+FCCLASS=?</b>	Service class capabilities -- Modem responds with all of the classes of operation of which it is capable (000,001).
<b>+FCCLASS=x</b>	Service class selection 0:     Data modem operation 1:     Class 1 FAX operation
<b>+FRH=3</b>	Receive HDLC data with 300 bps carrier
<b>+FRM=x</b>	Receive FAX data with "x" carrier 24:     2400 bps carrier 48:     4800 bps carrier 72:     7200 bps carrier 96:     9600 bps carrier
<b>+FRS=x</b>	Receive silence x = 0-255; 10 ms intervals
<b>+FTH=3</b>	Transmit HDLC data with 300 bps carrier

<u>Command</u>	<u>Description</u>
+FTM=x	Transmit FAX data with "x" carrier
24:	2400 bps carrier
48:	4800 bps carrier
72:	7200 bps carrier
96:	9600 bps carrier
+FTS=x	Transmission silence
	x = 0-255; 10 ms intervals



**WAN Specific Features**  
**The Internal Modem**

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A

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Software

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## Software

The Internet Advisor is shipped with all its software already installed on the hard drive. If you need to reinstall the software you must order the disks from your local Hewlett-Packard Sales Representative.

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B

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**Specifications for Internet Advisor**

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## Physical Characteristics

### Weight:

Ethernet/token-ring only	6.2 kg (13.7lbs)
Ethernet/token-ring/FDDI	8.1 kg (18 lbs)
WAN only	6.7 kg (14.9 lbs)
WAN/LAN	8.1 kg (17.9 lbs)

### Dimensions:

LAN only	8.5h x 30W x 29D cm (3.4H x 12W x 11.5D inches)
FDDI Undercradle	add 3.7 cm (1.5 inches) height for undercradle
WAN only	8.5H x 30W x 29D cm (3.4H x 12W 11.5 D inches)
WAN with LAN Undercradle	add 3.7 cm (1.5 inches) height for undercradle

### Display:

LAN or WAN	26.5 cm diagonal (10.4 inch) passive DSTN color LCD VGA; optional 26.5 cm diagonal (10.4 inch) active matrix TFT color VGA
J2300A	Standard 9.6 inch passive LCD monochrome VGA display, optional 8.4 inch active matrix VGA display

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## Operating Conditions

### Temperature:

Operating      +5°C to +40°C (+41°F to 104°F)

Non-operating -25°C to 60°C (-13°F to 140°F)

### Humidity:

Operating      20% to 80% Relative Humidity non-condensing to 40°C

Storage        10% to 90% Relative Humidity to 60°C

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## **Safety Conditions**

This instrument is designed for indoor use.

### **Safety Class I**

For continued protection from electrical shock, power cord ground must not be defective.

**Product Damage.** Do not use this product when:

- the product shows visible damage,
- fails to perform,
- has been stored in unfavorable conditions,
- or has been subject to severe transport stresses.

Make the product inoperative and secure it against any unintended operation.  
Contact your nearest Hewlett-Packard Sales office for assistance.

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## **Additional Help**

You can obtain additional assistance in the U.S. by calling:

Help Line at (719) 531-4567 (in the USA)

FAX (719)531-4506

E-Mail [ntd\\_helpline@hp0800.desk.hp.com](mailto:ntd_helpline@hp0800.desk.hp.com)

or Internationally by calling your local HP Sales Office.

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# Hewlett-Packard Sales Offices

Arranged alphabetically by country

## Headquarters Offices

If no local office is listed for your area, contact one of these headquarters offices.

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Alphabetically by country

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### Angola

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Systems (CMS) Ltd.  
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Tonno See Pianezza (To)

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Yusung-gu, Taejeon  
Tel: (82/42) 828-6701  
Fax: (82/42) 828-6709

##### Kuwait

Al-Khadiya Electronics & Electncals  
Equipment Co.  
P.O. Box 830  
Safat 13009  
Kuwait  
Tel: 965/24 59 815  
Fax: 965/24 59 852

##### Lebanon

Computer Information Systems (C.I.S.)  
Lebanon Street, Chammas Bldg.  
P.O. Box 11-6274  
Dora-Belrut  
Tel: (961/1) 405-413  
Fax: (961/1) 601-906  
Tel/Fax: (3579) 514-256  
*Cyprus-based line*  
Telex: 42309 chadis le

##### Malawi

See South Africa

##### Malaysia

Hewlett-Packard Sales (M) SDN  
BHD Ground Floor, Wisma  
CycleCam  
288, Jalan Raja Laut  
50350 Kuala Lumpur  
Tel: (60/3) 298-6555  
Fax: (60/3) 291-5495  
Telex: MA 31011

##### Penang

Hewlett-Packard Sales (M) SDN BHD  
6/F Wisma Penang Garden  
42 Jalan Sultan Ahmad Shah  
10050 Penang  
Tel: (60/4) 376-532  
Fax: (60/4) 371-027  
Telex: MA 41111

##### Mauritius

See South Africa

##### Mexico

Hewlett-Packard de Mexico, S.A. de  
C.V.  
Prolongación Reforma 700  
Col. Lomas de Santa Fe  
01210 Mexico, D.F.  
Tel: (52-5) 326-4392  
Fax: (52-5) 326-4301

##### Morocco

SICOTEL  
Complexe des Habous  
Tour C, avenue des Far  
Casablanca 01  
Tel: (212) 231-22-70  
Fax: (212) 231-65-45  
Telex: 27604

##### Mozambique

See South Africa

##### Nambia

See South Africa

##### The Netherlands

Hewlett-Packard Nederland B.V.  
Postbox 667  
1180 AR Amstelveen  
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Fax: (31/20) 647-8706

##### New Zealand

Hewlett-Packard (N.Z.) Ltd.  
186-190 Willis Street  
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##### Nigeria

Management Information  
Systems Co. Ltd.  
3 Gerard Road  
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Ikoyi, Lagos  
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Fax: (2341) 269.34.19  
Telex: 23582 DATEC NG

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P.O. Box 60 Skøyen  
N-0212 Oslo  
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Fax: (47) 22-73-56-19

Hewlett-Packard Norge AS  
Boehmergt. 44  
N-5037 Solheimsviken  
Tel: (47) 55-29-00-90  
Fax: (47) 55-29-10-72

##### Oman

IMTAC LLC  
P.O. Box 51196  
Mina al Fahal  
Muscat  
Tel: (968) 707-727, (968) 707-723  
Fax: (968) 796-639, (968) 797-709

##### Pakistan

Mushko Electronics (PVT) Ltd.  
68-W Sama Plaza  
Blue Area, G-7  
Islamabad 44000  
Tel: (92/51) 828-459  
Fax: (92/51) 816-190  
Telex: 54001 Muski Pk

Mushko Electronics (PVT) Ltd.  
Oosman Chambers  
Abdullah Haroon Road  
Karachi 74400  
Tel: (92/21) 524-131  
Fax: (92/21) 568-2298  
Telex: 29094 MUSKO PK

##### Panama

Electronico Balboa, S.A.  
Edif. El Dorado  
Ave El Pascal #30  
Apartado 4929  
Panama 5  
Tel: (507) 36-0722  
Fax: (507) 36-1820  
Telex: 368-3483 ELECTRON PG

##### Paraguay

ECSA Equipos Contables S.A.  
Calle Estados Unidos No. 961  
Asuncion  
Tel: (595-21) 49-0076  
Fax: (595-21) 49-7849

##### Peru

Cia Electro Mdica, S.A.  
Los Flamencos 145, Of. 301-302  
San Isidro, Lima 27  
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##### Philippines

The Online Advanced Systems Corp.  
2/F. Electra House  
115-117 Esteban Street  
Legaspi Village, Makati  
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Telex: 663-274 ONLINE PN

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Hewlett-Packard Portugal S.A.  
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1400 Lisboa  
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##### Puerto Rico

Hewlett-Packard Puerto Rico (3175)  
Metro Office Texaco Plaza Suite 100  
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Fax: (809) 749-5325

##### Qatar

Qatar Datamations Systems  
Al Ahed Building, 5th floor  
Al Muhthof Street  
Doha  
Tel: 974/43.99.00  
Fax: 974/43.21.54  
Telex: 4833

##### Romania

S&T Romania SRL  
Hewlett-Packard Distributor  
Sitraco Centre  
Bvd. Dimitrie Cantemir 1  
Etaj II - 210, Sector 4  
Bucuresti  
Tel: (1) 3237250  
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## Sales Offices United Kingdom

### Saudi Arabia

Modern Electronics Establishment  
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King Abdul Aziz St.  
Al-Khobar 31952  
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Telex: 871106 HPMEEK SJ  
Cable: ELECTA, AL-KHOBAR

Modern Electronics Establishment  
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Zaben Building, Tahūah St.  
Jeddah 21431  
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Telex: 602712 FARNAS SJ  
Cable: ELECTA, JEDDAH

Modern Electronics Establishment  
P.O. Box 22015  
Prince Musad Ibn Abdulaziz St.  
Riyadh 11495  
Tel: (9661) 476-3030  
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Telex: 402049 MEERYD SJ  
Cable: ROUFKO

### Singapore

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#29-00 Gateway West  
Singapore 0718  
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Telex: 087-34209 HPSGSO RS

### Slovak Republic

High Performance Systems  
Hewlett-Packard Distributor  
Polianky 5  
844 14 Bratislava  
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### Slovenia, Croatia, Macedonia

Hermes-Plus  
Hewlett-Packard Distributor  
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61000 Ljubljana  
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Tel: 61/193322  
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### South Africa

HiPerformance Systems (Pty.) Ltd.  
P.O. Box 120, Howard Place  
7450 Cape Town  
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HiPerformance Systems (Pty.) Ltd.  
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Fax: (2711) 806-1213

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08028 Barcelona  
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Fax: 93-430 84 68  
Avda de Zugazante  
Hewlett-Packard Española, S.A.  
Avda de Zugazante, 8  
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48930 Las Arenas, Guecho  
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Hewlett-Packard Española, S.A.  
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28230 Las Rozas, Madrid  
Tel: 1-631 16 00  
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Hewlett-Packard Española, S.A.  
Luis de Morales, 32  
Edificio Forum  
41018 Sevilla  
Tel: 95-453 29 10  
Fax: 95-453 30 92

Hewlett-Packard Española, S.A.  
plaza de America 2-51  
46004 Valencia  
Tel: 96-395 74 75  
Fax: 96-395 42 11

Vizcaya See Guecho

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Precision Technical Services (PVT) Ltd.  
65/14, Park Street  
Colombo 2  
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Surtel, Co., Inc.  
Grote Hofstraat 3-5  
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Paramaribo  
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Fax: (597) 42-0053

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Hewlett-Packard Sverige AB  
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164 93 Kista  
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Fax: (468) 444 25 25  
Hewlett-Packard Sverige AB  
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402 27 Göteborg  
Tel: (4631) 35-18-00  
Fax: (4631) 35-18-99  
Hjälmaragatan 3  
Box 371  
201 23 Malmö  
Tel: (4640) 660 72 00  
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Hewlett-Packard Sverige AB  
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Genève See Meyrin

Hewlett-Packard (Suisse) SA  
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CH-1217 Meyrin 1  
Tel: (41) 22-780 41 41  
Fax: (41) 22-780 42 20

Hewlett-Packard (Schweiz) AG  
Meriedweg 11  
CH-3172 Niederwangen (Bern)  
Tel: (41) 31-980 31 11  
Fax: (41) 31-980 33 90

Hewlett-Packard (Schweiz) AG  
In der Luberzen 29  
CH-8902 Urdorf/Zürich  
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Fax: (41) 1-735 77 00

### Taiwan, ROC

Hewlett-Packard Taiwan Ltd.  
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Chungli See Taoyuan Hsieh

Hewlett-Packard Taiwan Ltd.  
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Fax: (8867) 330-8568

Hewlett-Packard Taiwan Ltd.  
10F, 540, Sec. 1  
Wen-Hsun Road

### Taichung

Tel: (8864) 327-0153  
Fax: (8864) 326-5274

Hewlett-Packard Taiwan Ltd.  
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Ping-Chen, 32404  
Taoyuan Hsieh  
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Fax: (8863) 492-9669

### Thailand

Hewlett-Packard (Thailand) Ltd.  
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Bangkok 10110  
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Fax: (662) 254-6731

### Trinidad and Tobago

Borde Communications  
1 Valsayn Road  
Curepe, P.O. Box 897  
Port-of-Spain, Trinidad  
Tel: (809) 663-2087  
Fax: (809) 645-3352

### Tunisia

Precision Electronique  
5, rue de Chypre - Mutuelle Ville  
1002 Tunis Belvedere  
Tel: (216/1) 785-037  
(216/1) 890-672  
Fax: (216/1) 780-241  
Telex: (0409) 18238 TELEC TN

### Turkey

Hewlett-Packard  
Bilgisayar ve Olcum Sistemleri A.S.  
Pans Cadesi No3 D.9  
06670 Kavaklıdere Ankara  
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Fax: 90 (312) 425-47-45  
Telex: 46180

Hewlett-Packard  
Bilgisayar ve Olcum Sistemleri A.S.  
19 Mayıs Caddesi Nova/Baran  
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Sisli 80220  
Istanbul  
Tel: (90212) 224 59 25  
(12 lines)  
Fax: (90212) 224 59 39

### United Arab Emirates

Emtac Ltd.  
P.O. Box 2711  
Abu Dhabi  
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Fax: (971/2) 72-30-58  
Telex: 46306

Emtac Ltd.  
Block RBS Arencio Bldg.  
Zabai Road  
P.O. Box 8391  
Dubai  
Tel: (971/4) 37-75-91  
Fax: (971/4) 37-08-99  
Telex: 48710

### United Kingdom

Hewlett-Packard Limited  
Cain Road  
Bracknell  
Berkshire RG12 1HN  
Tel: (44344) 366666  
Fax: (44344) 362852  
Telex: 849 555



## Sales Offices United States

### United States

#### Test & Measurement

##### Customer Business Center

*To request formal quotations,  
place orders, and ask for other  
order information.*

P.O. Box 4026  
Englewood, CO 80155-4026  
Tel: (800) 829-4444

#### Test & Measurement

##### Customer Information Center

*For presale assistance in  
product selection and other  
product or general  
information.*

Tel: (800) 452-4844

### Alabama

Hewlett-Packard Co. (3114)  
620 Discovery Drive  
Huntsville, AL 35806  
Tel: (205) 971-2000  
Fax: (205) 971-8899

### Arizona

Hewlett-Packard Co. (2401)  
8080 Pointe Parkway West  
Phoenix, AZ 85044  
Tel: (602) 273-8000  
Fax: (602) 273-8022  
(602) 438-2355

Hewlett-Packard Co. (2406)  
3400 East Britannia Drive  
Bldg. C, Suite 124  
Tucson, AZ 85706  
Tel: (602) 573-7400  
Fax: (602) 573-7429

### California

Hewlett-Packard Co. (2403)  
1421 S. Manhattan Avenue  
Fullerton, CA 92631  
Tel: (714) 999-6700  
Fax: (714) 758-7559

Hewlett-Packard Co. (2438)  
130 Cremona, Suite A  
Goleta, CA 93117  
Tel: (805) 685-6100  
Fax: (805) 685-6163

Irvine See Fullerton

Hewlett-Packard Co. (2417)  
5245 Pacific Concourse Drive  
Suite 100  
Los Angeles, CA 90045  
Tel: (310) 643-5112  
Fax: (310) 535-2601

Hewlett-Packard Co. (2407)  
351 E. Evelyn Avenue  
Bldg. 333  
Mountain View, CA 94039  
Tel: (415) 694-2000  
Fax: (415) 694-3594

Hewlett-Packard Co. (2415)  
3831 N. Freeway Blvd.  
Sacramento, CA 95834  
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Fax: (916) 567-8777  
(916) 567-8778

Hewlett-Packard Co. (2404)  
9606 Aero Drive  
San Diego, CA 92123  
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Fax: (619) 268-8487  
(619) 279-0560

Santa Barbara See Goleta

Hewlett-Packard Co. (2428)  
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Van Nuys, CA 91411  
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Fax: (818) 779-2350

Ventura See Van Nuys

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Boulder, CO 80301  
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Fax: (303) 938-3025

Hewlett-Packard Co. (2411)  
24 Inverness Place East  
Englewood, CO 80112  
Tel: (303) 649-5000  
Fax: (303) 649-5787

### Connecticut

Hewlett-Packard Co. (4457)  
4 Stamford Forum, 9th FL  
Stamford, CT 06901  
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Fax: (203) 325-5680

Hewlett-Packard Co. (4458)  
15 Glastonbury Blvd.  
Glastonbury, CT 06033  
Tel: (203) 633-8100  
Fax: (203) 659-6087

### District of Columbia

See Rockville, Maryland

### Florida

Hewlett-Packard Co. (3179)  
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Fort Lauderdale, FL 33309  
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Fax: (305) 938-2293

Hewlett-Packard Co. (3177)  
6177 Lake Ellenor Drive  
Orlando, FL 32809  
Tel: (407) 859-2900  
Fax: (407) 826-9309

Hewlett-Packard Co. (3166)  
5550 Idlewild, Suite 150  
Tampa, FL 33634  
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Fax: (813) 889-4445

### Georgia

Hewlett-Packard Co. (3108)  
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Atlanta, GA 30339  
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Fax: (404) 980-7010

### Hawaii

Hewlett-Packard Co. (2409)  
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### Illinois

Hewlett-Packard Co. (2619)  
2205 E. Empire Street  
Bloomington, IL 61704  
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Fax: (309) 662-0351

Hewlett-Packard Co. (2603)  
1200 East Diehl Road  
Naperville, IL 60566  
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Fax: (708) 505-7876

Hewlett-Packard Co. (2601)  
5201 Tolview Drive  
Rolling Meadows, IL 60008  
Tel: (708) 255-9800  
Fax: (708) 255-4995

### Indiana

Hewlett-Packard Co. (2605)  
201 W. 103rd Street, Suite 100  
Indianapolis, IN 46290  
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Fax: (317) 843-1291

Hewlett-Packard Co. (2635)  
111 E. Ludwig Road, Suite 108  
FL Wayne, IN 46825  
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Fax: (219) 480-3730

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Hewlett-Packard Co. (2612)  
4050 River Center Court  
Cedar Rapids, IA 52402  
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Fax: (319) 378-1024

### Kansas

Hewlett-Packard Co. (2622)  
P.O. Box 780408  
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Fax: (316) 636-4504

### Kentucky

Hewlett-Packard Co. (2623)  
305 N. Hurstbourne Parkway  
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Louisville, KY 40222-5141  
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Fax: (502) 426-0322

### Maryland

Hewlett-Packard Co. (4432)  
3701 Koppers Street  
Baltimore, MD 21227  
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Fax: (410) 362-7650  
Hewlett-Packard Co. (4430) (4400)  
2101 Gaither Road  
Rockville, MD 20850  
Tel: (301) 258-2000  
Fax: (301) 258-5986

### Massachusetts

Hewlett-Packard Co. (4450)  
29 Burlington Mall Road  
Burlington, MA 01803-4182  
Tel: (617) 270-7000  
Fax: (617) 221-5240

### Michigan

Hewlett-Packard Co. (2617)  
3033 Orchard Vista S.E., Suite 100  
Grand Rapids, MI 49546  
Tel: (616) 957-1970  
Fax: (616) 956-9022

Hewlett-Packard Co. (2607)  
39550 Orchard Hill Place Drive  
Novi, MI 48376  
Tel: (313) 349-9200  
Fax: (313) 349-9240

### Minnesota

Hewlett-Packard Co. (2606)  
2025 W. Larpenteur Avenue  
St. Paul, MN 55113  
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Fax: (612) 641-9787

### Missouri

Hewlett-Packard Co. (2611)  
6601 Winchester Avenue  
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Kansas City, MO 64133-8230  
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Fax: (816) 737-4690

### Missouri (cont'd)

Hewlett-Packard Co. (2610)  
530 Maryville Centre Drive  
St. Louis, MO 63141  
Tel: (314) 542-1500  
Fax: (314) 542-1585

### Nebraska

Hewlett-Packard Co. (2616)  
2533 N. 117th Avenue  
Omaha, NE 68164  
Tel: (402) 493-0300  
Fax: (402) 493-4334

### New Jersey

Hewlett-Packard Co. (4415)  
West 120 Century Road  
Paramus, NJ 07653  
Tel: (201) 599-5000  
Fax: (201) 599-5382

Hewlett-Packard Co. (4417)  
20 New England Ave. West  
Piscataway, NJ 08854  
Tel: (908) 562-6100  
Fax: (908) 562-6246

### New Mexico

Hewlett-Packard Co. (2402)  
5130 Masthead NE  
Albuquerque, NM 87109  
Tel: (505) 823-6100  
Fax: (505) 823-1243

Hewlett-Packard Co. (2420)  
1362-C Trinity Drive  
Los Alamos, NM 87544  
Tel: (505) 662-6700  
Fax: (505) 662-4312

## Sales Offices Uruguay

### New York

Hewlett-Packard Co. (4444)  
114 Great Oaks Office Park  
Albany, NY 12203  
Tel: (518) 452-9947  
Fax: (518) 452-8989

### Buffalo *See Cheektowaga*

Hewlett-Packard Co. (4445)  
Airport Commerce Park  
305 Cayuga Road, Suite 160  
Cheektowaga, NY 14225  
Tel: (716) 264-4100  
Fax: (716) 264-4150

Hewlett-Packard Co. (4442)  
290 Woodcliff Drive  
Fairport, NY 14450  
Tel: (716) 264-4000  
Fax: (716) 264-4150

Hewlett-Packard Co. (4440)  
5010 Campuswood Drive  
East Syracuse, NY 13057  
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### Huntington *See Melville*

Hewlett-Packard Co. (4411)  
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### Rochester *See Fairport*

Hewlett-Packard Co. (4409)  
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### North Carolina

Hewlett-Packard Co. (3142)  
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Fax: (919) 460-2296  
(919) 460-2297

Hewlett-Packard Co. (3145)  
9401 Arrowpoint Blvd.  
Charlotte, NC 28210  
Tel: (704) 527-8780  
Fax: (704) 559-7444

Hewlett-Packard Co. (3111)  
7029 Albert Pick Road, Suite 100  
Greensboro, NC 27409  
Tel: (919) 665-1800  
Fax: (919) 668-1797

Mailing Address  
P.O. Box 26500  
Greensboro, NC 27426

### Raleigh *See Cary*

### Ohio

Hewlett-Packard Co. (2624)  
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Fax: (614) 478-6299

Hewlett-Packard Co. (2604)  
7887 Washington Village Drive  
Dayton, OH 45459  
Tel: (513) 433-2223  
Fax: (513) 433-8633

Hewlett-Packard Co. (2608)  
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Strongsville, OH 44136  
Tel: (216) 243-7300  
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### Oklahoma

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3525 NW 56th Street, Suite C  
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Fax: (405) 948-4760

Hewlett-Packard Co. (3183)  
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Tulsa, OK 74136  
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